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NUCLEAR LICENSING AND REGULATORY REFORM

HEARINGS

BEFORE THE

SUBCOMMITTEE ON NUCLEAR REGULATION

OF THE

COMMITTEE ON

ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

NINETY-EIGHTH CONGRESS

FIRST SESSION

ON

S. 893

A BILL TO AMEND THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, TO IMPROVE THE NUCLEAR POWERPLANT SITING AND LICENSING PROCESS, AND FOR OTHER PURPOSES

S. 894

A BILL TO IMPROVE THE NUCLEAR LICENSING AND REGULATORY PROCESS, TO AMEND THE ATOMIC ENERGY ACT OF 1954, AND FOR OTHER PURPOSES

MAY 25, 26; JUNE 14, 16; AND JULY 14, 1983

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NUCLEAR LICENSING AND REGULATORY REFORM

WEDNESDAY, MAY 25, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, D.C.

The subcommittee met at 10:15 a.m., in room SD-406, Dirksen Senate Office Building, Hon. Alan K. Simpson (chairman of the subcommittee) presiding.

Present: Senators Simpson and Mitchell.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Good morning.

The Subcommittee on Nuclear Regulation meets today to consider the subject of nuclear licensing and regulatory reform.

For this hearing we are fortunate to have all five of the Commissioners of the NRC present. This hearing marks the first of a series of hearings the subcommittee will convene on the subject of licensing reform.

Tomorrow, we are scheduled to hear from Donald Hodel, Secretary, U.S. Department of Energy.

Upon our return from the Memorial Day recess, we shall resume our hearings to hear from a wider range of witnesses on this issue with the serious effort and bipartisan support of the ranking minority member of this subcommittee, Senator Hart, and others.

I do trust that we will be able to complete our hearings in June and then move forward with consideration of legislation.

Both the NRC and the Department of Energy have now submitted proposed legislative packages. I know you have reviewed that package thoroughly with an eye toward recommending changes in the current process in order to achieve a more stable, effective, and efficient approach to the licensing of nuclear powerplants.

After careful examination of those two proposals and based on what is now nearly my 5 years of experience in this subcommittee in overseeing the licensing and regulatory process of the NRC, I conclude that the time is quite right perhaps for oversight to consider reform of that process.

As the Commission points out, the current licensing system was established 29 years ago, a time when the nuclear industry was fundamentally different from what we have today. Unfortunately, I think the licensing system has not kept pace with the changes in the industry. As a consequence, we have witnessed a continuing erosion of the Commission and the industry "to protect the health and safety" of our country, which is its sole mission.

I think everyone who has examined this licensing process has reached the conclusion it suffers from significant deficiencies in one way or another, regardless of what side we are on, and have reached the point where the process does serve the interests of all—the public, the NRC, the applicant, or the intervenors. That view is now shared by the Department of Energy. There are others who have studied the Department in great detail and they have reached similar conclusions. Indeed, the consensus for licensing reform has only increased, not decreased particularly since the Three Mile incident, and we in Congress, I think, cannot afford to turn from that issue.

If we are serious in our efforts to provide a greater degree of health and safety, here may well be a starting point.

So, Chairman Palladino, I welcome you and each of your Commissioners, and you may proceed with your prepared statement.

STATEMENT OF HON. NUNZIO J. PALLADINO, CHAIRMAN, NUCLEAR REGULATORY COMMISSION, ACCOMPANIED BY VICTOR GILINSKY, COMMISSIONER; JOHN F. AHEARNE, COMMISSIONER; THOMAS M. ROBERTS, COMMISSIONER; AND JAMES K. ASSELSTINE, COMMISSIONER

Commissioner PALLADINO. Thank you, Mr. Chairman. I am pleased to appear before you and your subcommittee today for the purpose of discussing the Nuclear Power Plant Licensing Reform Act of 1983. Several of my fellow Commissioners and senior members of the NRC staff accompany me today.

It is my understanding that your subcommittee is primarily interested in identification of the problems which led to the drafting of the Nuclear Powerplant Licensing Reform Act of 1983, and in how the proposed reform act provides solutions to these problems. Accordingly, in my prepared testimony, I will address those matters rather than discuss in detail the provisions of the bill itself.

The current NRC licensing process has not changed substantially since it was originally enacted 29 years ago in the Atomic Energy Act. That licensing process was a prudent course to follow when the nuclear power industry was in its early conceptual and development years. In the early years, there were many first-time nuclear plant applicants, designers, and constructors, and many novel design concepts. Accordingly, the process was structured to allow licensing decisions to be made while design work was still in progress and to focus on case-specific reviews of individual plantsite considerations.

With the maturation of the industry, it is now possible to describe and evaluate standardized plant designs, essentially complete designs prior to plant construction, and proposed plant sites without plant design details. At the same time, since the early 1950's and 1960's, the NRC's safety reviews have become increasingly time consuming and complex, and NRC review obligations have been expanded to cover a wide range of nonsafety issues under the National Environmental Policy Act of 1969. Therefore, the Commission decided that the licensing process must be reformed to reflect these and other developments concerning the licensing review of nuclear facilities.

Several specific concerns led us to propose this licensing reform legislation. The Commission has been concerned that its present licensing procedures are not the most effective or efficient means of licensing nuclear plants. Industry representatives have complained that the process creates uncertainty and have urged a process which would result in more stability for licensing decisions. Members of the public have been critical of participation opportunities which they contend come late in the process when large expenditures have already been made on a project. In addition, industry practice has been to custom build each individual reactor. Thus, another concern was that the current licensing process does little to facilitate standardized designs and their possible advantages for both plant safety and plant economics.

The Commission's proposed legislation would provide for final resolution of designated issues early in the licensing process and thus would enhance the efficiency and stability, as well as the timeliness, of the process. The legislation would also permit the Commission to alter its hearing process to assure that adjudicatory—that is, trial-type procedures—are used only where a particular dispute can best be resolved by use of those procedures. The legislation would also facilitate the use of standardized designs. I will now discuss each of these solutions in turn.

LICENSING REVIEW

Historically, licensing review has been conducted as a two-step process. Step one requires a prospective licensee to obtain a construction permit from the Commission. Step two requires a licensee to obtain an operating license, usually several years after the construction permit has been issued.

The Commission's proposed legislation would permit the Commission to issue a combined construction permit/operating license [CP/OL]. The legislation would also provide for review of proposed sites for reactors and for review of reactor designs prior to and apart from an application for a specific plant. The Commission's determinations made during these reviews would be final as to the issues covered in the reviews. Thus, an applicant for a CP/OL could reference in its application an NRC-approved site and design and the CP/OL review could be limited solely to issues raised by the matching of the site and design.

This approach would encourage industry to submit more complete designs and would enable the Commission to resolve with finality designated issues early in the licensing process. In so doing, it would facilitate regulatory review, provide earlier notice to the public and timely opportunity for participation, bring about earlier resolution of issues, and permit more economic and effective use of both resources and time by all parties concerned.

The current process holds the potential for duplicative reviews by the NRC and the States on need-for-power and alternative-energy-sources issues. The proposed legislation authorized the Commission to rely for the resolution of these issues on the certifications of competent Federal, regional, or State entities.

Finally, the current regulatory process faces questions involving the consideration of economic costs of regulatory decisions. The proposed legislation makes explicit the NRC's authority to consider the economic consequences of its regulatory practices, including the cost of safety requirements consistent with the Commission's paramount responsibility to protect public health and safety.

STANDARDIZATION

Although the combined CP/OL and the early site review could be used in conjunction with one-time custom designs, the combined effect of these provisions, together with the provisions for standardized design approvals, would facilitate and encourage standardization. Use of standardized designs can improve both plant safety and plant economics.

From a safety standpoint, repeated use of standard designs could materially improve construction practices and quality assurance. In addition, experience gained at a standard plant would be relevant to operating personnel, equipment, and procedures at like standard nuclear powerplants. This could lead to more effective maintenance of key safety components and could improve overall operations. Moreover, standardization could make it easier for the NRC to insure that plants are built and operated safely.

Standardization can also have economic benefits. Standardization can reduce construction times and costs, and can lead to better use of design, engineering, and vendor resources. Ultimately, this would benefit consumers with regard to both power costs and public health and safety.

HEARINGS

The Commission's hearing process has also been criticized by many participants. The agency has interpreted section 189 of the Atomic Energy Act to require an adjudicatory hearing involving trial-type procedures for the licensing of commercial nuclear powerplants.

In order to make that hearing process more flexible, the Commission has proposed a discretionary hybrid hearing process in its reform legislation. That process is patterned after similar provisions in the Nuclear Waste Policy Act of 1982 regarding hearings on spent fuel storage expansion applications. This hybrid procedure would, in effect, act as a screening process and would assure that trial-type procedures are used only where a dispute has been identified that can only be resolved by those means. Thus, the hearing process should become more effective and efficient.

Uncertainty would also be reduced by defining the purpose of NRC licensing hearings. The proposed legislation provides that hearings are to resolve issues of fact in dispute between the parties to the proceeding.

CONCLUDING REMARKS

At least four Commissioners supported the need for reforms; the major difference among these four was in how far to go in making the reforms. I am sure each individual Commissioner will express his views today on how far these reforms should go.

Some may argue that many of these reforms can be done administratively, and that passage of a new law is not necessary. Such a view seems to ignore several points:

First, if we are to provide stability to the licensing process, it is desirable for the measures such as the ones we have proposed have the imprimatur of the Congress.

Second, as the Office of Technology Assessment study conducted for the House Interior Committee and Senate Subcommittee on Nuclear Regulation points out, legislation will probably be necessary to pursue substantial standardization. This is because, under circumstances identified in the study, neither the industry nor the NRC would take these steps voluntarily. As a minimum, even if only some degree of procedural standardization is sought, this study encourages a congressional statement of national policy.

We believe that other matters are best dealt with by administrative change. These include backfitting, the role of the NRC staff, separation of functions (ex parte), and other procedural aspects of the hearing process.

This concludes the Commission's prepared remarks, Mr. Chairman. Appended to my testimony are responses to specific questions appearing in your May 18, 1983 letter. We will be pleased to answer any other questions you may have regarding the problems, solutions, and underlying reasons for the proposed Nuclear Powerplant Licensing Reform Act of 1983.

Senator SIMPSON. Thank you very much, Mr. Chairman.

I think maybe one or two Commissioners wish to make a statement, and we will come to that.

I believe you had a statement, Commissioner Gilinsky, but let me pause first to thank Senator Mitchell for his attendance. He is, indeed, a very fine, contributing member of this subcommittee. He gives a very thoughtful assist to our efforts, and I am very appreciative of his service here.

Do you have anything you want to share?

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator MITCHELL. Thank you, Mr. Chairman.

I appreciate the opportunity to be here to consider the testimony of the Chairman and the other members of the Commission.

I would ask those who comment henceforth to address themselves to two points that are of particular concern to me.

First, is there a need for such legislation?

My understanding is that no plant has been ordered for 5 years and many have been canceled.

Does anyone at the witness table anticipate a substantial reversal of that history, making the additional reform necessary and, if so, what is that estimate based on?

Second, I am concerned personally, as I was with other comparable legislation, about the opportunity for full public participation.

I must say, Mr. Chairman, I am a little bit concerned to hear you talk about so-called trial-type procedures as though it is somehow a pejorative or bad thing. We entrust the life and death of humans and the liberty of humans to trial-type procedures, and I think no one would think that they are bad in that sense. If we are willing to do that in situations that involve the life and liberty of our citizens, why is it such a bad thing here?

After many years of experience, I happen to believe that the function of cross-examination in an open, contested hearing is one of the greatest engines for obtaining the truth that man has been able to devise. And I am a little bit concerned about the suggestion that somehow it is an obstacle or hindrance to be done away with.

I have an open mind, but I would like to hear what the reasons are for this and why that is such a bad thing in this context. Those are the two areas of my principal concern, Mr. Chairman. I am pleased to join you in this effort.

Senator SIMPSON. Thank you very much.

Commissioner PALLADINO. May I make one additional statement?

Senator SIMPSON. If you wish.

Commissioner PALLADINO. Senator Mitchell, I do not think we intended to have our comments imply that a trial-type proceeding is pejorative in any way. We are looking at the fact that this is a good way to settle matters in dispute, but it may not necessarily be the most effective way to get dialog on various technical issues.

That is why the hybrid suggestion has been made, and that is why it is hybrid while it is still in dispute.

Senator SIMPSON. Commissioner Gilinsky, I believe you had a statement you wished to make.

STATEMENT OF VICTOR GILINSKY, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Commissioner GILINSKY. Mr. Chairman and Senator Mitchell, I appreciate this opportunity to comment on the Commission's legislative proposal on nuclear licensing, particularly as my views on this subject are rather different from those of my fellow Commissioners.

I would like to start with a word about the assumptions which underlie this and other licensing reform proposals. The conventional view is that nuclear licensing is so strewn with obstacles and so uncertain that utilities have become discouraged, and that they cannot be expected to order nuclear plants unless the regulators stabilize safety requirements.

My own view is that the problems have been overdramatized. The experience of successful utilities demonstrates that it is possible to build plants in a reasonable time, and to do it economically.

It is also true, however, that NRC requirements have increased and become more prescriptive, and the end is not in sight. But the reason for this is not capricious regulation; it is the uneven safety performance of the nuclear utilities, and their inability to regulate themselves.

Some of the utilities, of course, are very capable and have been doing a good job. But others are not; and some of them should never have been allowed into this business.

The poor performance of some utilites dictates ever tighter safety requirements across the board. We had a reminder of that a couple of months ago. Our investigation after the failure of the Salem reactor trip breakers disclosed serious deficiencies in maintenance and plant operations. As a result, we will likely expand our oversight in these areas. This is a graphic illustration of how requirements grow.

From the point of view of safety—and it is well to remind ourselves that nothing threatens this industry more than another large accident—we should concern ourselves more with improving the performance of the utilities than with cheering them up with more accommodating licensing rules.

It is essential that every new plant receive a thorough preoperation NRC review, and that it be allowed to operate only after a formal agency approval—in my view, by the Commissioners themselves. For this reason, I am very much opposed to the so-called one-step license. It would be desirable to have a single, thorough design review and approval before the start of construction. But giving a utility an operating license at the same time it gets a construction permit makes about as much sense as handing an incoming freshman his college diploma.

The Commission's proposal allows for a preoperational review, but some of the industry groups want to eliminate it, and I am concerned about how these provisions will be interpreted. So long as the law tells a utility building a plant that it has an operating license and, at the same time, tells the regulators it is still up to them to determine the readiness of the plant for operation, someone is being fooled. I am concerned that it may be those who expect a rigorous preoperation check.

On the basis of my experience, I believe that the NRC should, in fact, be increasing the number of licensing stages, though not hearings. In France and in the U.K., for example, there are a number of specific and formal regulatory approvals that must be obtained as a plant nears commercial operation. It is interesting that, in France, a utility is first issued a temporary license; a final operating license is given only after a 2- to 3-year shakedown period.

Aside from the one-step license provision, the Commission's legislative proposal seems a reasonable effort to adjust our process. The proposal fails, however, to include the single most important improvement that we could make in the licensing process. That is to abolish the NRC staff's role as a full party in the hearings.

Nothing has so undermined public confidence in the NRC as the spectacle of the NRC staff arguing the utility's case in hearings. Whether or not this role has affected the staff's safety judgments, it has made a terrible impression on the public—and nowhere more so than around Three Mile Island.

Moreover, because the NRC staff lawyers do not have a concrete stake in resolving the case, and because of their own bureaucratic interests, they have sometimes exacerbated the litigative nature of hearings. The solution is to take the staff out of the hearings as a full party advocating issuance of a license. This would have the added benefit of eliminating the *ex parte* bars between the staff and the Commissioners.

When I suggested this years ago, a former NRC Chairman insisted the staff was needed to get the less competent utilities through the hearings. I assume that is no longer an acceptable argument. But it brings home the lengths to which we have gone to keep the door open to virtually every utility.

Which brings me back to the question of utility performance and what we can do about it. The disappointing performance of some of the utilities is, to my mind, a direct consequence of the fragmentation of the nuclear power industry. Any effort at serious reform has to move beyond tinkering with the licensing process and has to confront the fact that we have in this country about 60 utilities either running nuclear plants or building them. That is roughly 10 times as many operating entities as in any other country. Most of our utilities will have no more than two reactors, and many will have just one.

This makes for a bewildering variety of equipment and procedures. As a result, it is very difficult, both for the utilities and for us, to come to grips with safety problems in a systematic and satisfactory way. The situation cries out for order.

The conventional wisdom says that licensing reform is the way to promote standardized reactor designs. The trouble with this approach is that it has things the wrong way around. France, for example, has standardized nuclear power plants not because its licensing rules permit this, but because France has one operating company that builds its own plants and buys from one manufacturer. That is not the right answer for us, but I also do not think we can continue to cater to the idiosyncrasies of 60 utility managements and accept 60 different solutions to safety problems.

In short, there is a mismatch between the safety imperatives of nuclear technology and our institutions for using it commercially. If we continue with the present fragmented operating structure, then the demands of safety—and public acceptance, as well—will drive us to more intrusive and prescriptive regulation. Despite all the talk about regulatory reform, that is the course we are on.

There is an alternative, if we really want to bring order to the use of this technology under a less prescriptive regulatory regime. That is to reduce sharply the number of nuclear operating companies. Each of these would then operate a large number of powerplants, and each would be better able than most of the utilities today to regulate itself. I realize this may sound utterly unrealistic. But so is the idea of major changes in nuclear regulation without changes in the structure of the industry.

Thank you, Mr. Chairman.

Senator SIMPSON. Thank you very much.

Senator MITCHELL. Mr. Chairman, the Finance Committee on which I serve, is now taking up a bill of which I am a sponsor. I will come back because I do want to participate in the rest of this hearing. I apologize for having to leave.

Senator SIMPSON. Please proceed, Commissioner Ahearne.

STATEMENT OF JOHN F. AHEARNE, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Commissioner AHEARNE. With the Senator's indulgence, I would like to take a few minutes to speak to licensing reform. I suspect this will be my last opportunity in this forum.

In general, I agree with several of Victor's points, in particular, the desirability of consolidation. That was a point that was stressed very strongly by Mitch Rogovin in his review following TMI of the review done by the NRC.

In addressing licensing reform, I think we do have to ask what problems are being solved? One question would be do we need more nuclear powerplants?

This really is not an NRC issue, but I would comment that would primarily be affected by power demand. There are related questions as to the desirability of smaller plants, effective inflation rates, et cetera.

There is a second question which is the quality of construction and operation. The NRC places minimum standards for health and safety. Industry should be concerned about the quality of construction and operation, and it is here that consolidation may be most germane.

The third problem to be solved is the licensing process, and I would like to address one aspect of it in particular, and that is the hearing process, what it may be doing and what it may not be doing.

In order to lay the framework for that, I would like to go back to a few memos I have written inside the NRC.

In a recent operating license hearing, the NRC staff addressed a motion in which the intervenor had asked permission to file new contentions regarding the plant even though the evidentiary record had been closed for several months. The staff made several interesting comments in their response to this motion:

> [The intervenor] does not address the issue of reopening the record in its motion. Under such circumstances, the staff would normally argue that the movant has not met its burden. However, there are special circumstances in this case which cause the staff to support reopening the record. The safety issue which [the intervenor] has raised is a most serious one. It is an issue which must be explored in sufficient depth to permit a confident judgment on it before reactor operation is licensed. . . . The public interest in having this serious safety issue litigated in the open and thereby affording the public the opportunity to be fully apprised on the matter warrants the exercise of the Board's discretion to reopen the record. . . . The information regarding the extent of construction defects has the potential for resulting in the possible denial of an operating license. In the special circumstances of this case, the Staff's position is that the public interest is best served by the Board reopening the record.

The issue I found interesting there was whether the role of the board is to provide an independent overall technical review of plant adequacy, or is the role to resolve issues in litigation, leaving the fundamental technical review to the staff. Clearly in that issue, the staff seemed to be coming down saying it was up to the board.

In the next few years, the vast majority of the hearings conducted by licensing boards will be on operating licenses or amendments rather than on construction permits.

I believe the Commission and perhaps the Congress should provide guidance and, if necessary, put in place a rule describing the approach that should be taken by these boards. This would get to the issue of what is the purpose of the hearing.

I think there are at least three basic alternatives:

First. The board members should view themselves as charged with making a fundamental finding on health and safety of the plant. In order to do this, they should avail themselves of all available information from the staff, the applicant, and the intervenors, and also should be able to call upon their own consultants to provide analyses and reports to serve as witnesses if they believe it is desirable.

The board thus could be seen as basically an in-house independent review panel protecting the public interest.

Second. The board's role should be to resolve disputed issues. In this role, the board's responsibility would not be to make a fundamental health and safety finding but rather to resolve the issues raised by parties in opposition, whether they be the staff, intervenors, or applicant.

The Commission would rely primarily upon the staff's review for the Commission to make its fundamental judgment on health and safety and would rely on the board to arbitrate and reach conclusions regarding any issues in dispute.

That is the role that I see as the appropriate one.

Third. Then a final alternative would be for the board to be a body to assure there is a complete record, including a record of all pertinent staff-licensee interaction.

For example, the boards could verify that the licensee will meet commitments that have been made, either in negotiation with the staff or in response to staff requirements.

The argument supporting this approach would be that the staff currently does not provide information in sufficient detail to the Commission for the Commission to be able to make a judgment at the time the Commission addresses whether the license should be issued or for the Federal courts to determine whether the Agency decision is supportable.

All three of those approaches can be seen in the way our boards address the hearing process, and I believe that clarification will really help the Agency.

Now, I have a few proposals on the licensing and the structuring of the licensing process, and let me briefly sketch them, and it does go back to the fact that in the 1950's, Congress legislated the basic licensing process. After modifications over the subsequent years, the current process always starts with an adjudicatory hearing held prior to the construction stage in which the NRC staff and the licensee defend the proposed plant against the opposition of any intervenors admitted as parties to the hearing. Following construction of the plant, the process is repeated whenever intervenors contest the plant, with the NRC staff and applicant requesting approval for the plant to operate and opposing the intervenors before an NRC Licensing Board. The first hearing addresses not only the plant, but also its location, including environmental impacts and whether it is needed. The second hearing may address emergency planning around the plant along with other issues.

Deep concern about the process has been expressed by all participants. Administrative and legislative changes have been proposed to modify the process to remove or add issues, fund intervenors, speed up the hearings, combine the two hearings, et cetera.

An additional issue is what role should the States have in licensing nuclear powerplants. As California has shown, it is possible for a State to ban nuclear powerplants because of concerns over their safety even though in theory such action would be preempted by Federal control over radiation hazards.

What I would propose is a restructuring of the licensing process which basically removes the NRC from the environmental aspects of the plant, giving those to States, regional agencies, or other Federal agencies to resolve. The NRC would retain jurisdiction over all health and safety issues but would not hold adjudicatory hearings for their resolution.

I would suggest the following:

Site location issues would be handled by State, regional, or other Federal agencies such as FEMA, ERA, and FERC. These issues include environmental impacts, need for power, and emergency planning. Approval for selection of a site and the need for a plant would be done at the State or regional level. To enable non-Federal agencies to adequately address the siting issues, total Federal preemption would be removed for certain parts of the radiation hazard issue. States would have to accept the operating characteristic envelope given by the NRC, basically that the plant would meet EPA standards for normal operation. In addition, any exclusionary siting criteria established by the NRC would also hold, such as population density criteria. However, States could go beyond these criteria and become more restrictive if they wished.

Most States should be able to handle this responsibility, but those that cannot, or would not wish to, could request EPA address these questions on behalf of the State. The EPA decision would be certified to the Governor or a designated State authority for final decision.

Probably few States would have adequate competence in seismicity. The NRC and the USGS would provide advice on these areas and expert testimony in any State or EPA hearing at the request of the States. There may be a need for an NRC seismic veto on the site on the basis of health and safety.

For consideration of accidents, NRC would provide probability of release and consequence estimates under varying emergency response assumptions. These would not be challengeable, although the State would not be required to accept the NRC estimates. The responsibility for approving emergency planning, however, would reside with either FEMA or the State. Basic feasibility questions would be addressed in the State siting approval process. Final approval prior to operation would be a FEMA/State matter. Such certification would be a necessary—but not sufficient—condition for the NRC issuing an operating license.

Plant health and safety issues, covering design, construction, and operation would be handled by the NRC. Using generic rulemaking, which could include legislative proceedings, the NRC would establish regulations which must be met. All plant specific health and safety reviews would be done by the NRC staff, leading to NRC certification. The process would be similar to that currently used for uncontested plants. Intervenors objecting to a particular plant would use the 2.206 process.

The issue of whether the staff is a party in hearings would no longer be relevant since at least on plant health and safety issues there would be no adjudicatory hearings. There would be basically no major Federal action being taken by the NRC, so it does not appear there would be any need for EIS's to be written by the NRC. I would say parenthetically this would have to be incorporated into legislation. The only hearings involving the NRC with respect to commercial nuclear powerplants, other than enforcement hearings, would be those in which the NRC provides service to a State or to EPA The prospective licensee would be the proposing party in the sense of cross-examination and the NRC staff would be held immune from discovery and other time-consuming resource drains.

Finally, to address the two questions Senator Mitchell asked—is there a need for the legislation?—I think I have just previously addressed some of those aspects.

Senator SIMPSON. If you could speed this along, I would appreciate it.

Commissioner AHEARNE. Regarding the opportunity for full public participation, I disagree with the Senator's view with respect to the need for cross-examination and the jury trial system, and adjudication being the most effective resolution.

I agree that for the issues he raised it does seem appropriate for the types of circumstances mentioned, but for the resolution of technical issues, I do not think it appropriate.

Senator SIMPSON. Thank you.

Commissioner Asselstine.

STATEMENT OF JAMES K. ASSELSTINE, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Commissioner ASSELSTINE. Mr. Chairman, I would just like to add a few comments of my own regarding the Commission's licensing reform proposal.

First, with the exception of three provisions, which I will discuss in a few moments, I strongly support the Commission's legislative proposal.

My principal objective in recommending this proposal to to you is to help modify our present regulatory framework for licensing nuclear powerplants in a manner that will improve the effectiveness of the process and lead to better regulatory decisions.

In my view, licensing reform ought to serve also the goal of reducing unnecessary uncertainties and inefficiencies in the process, making the best use of available resources, and preserving and enhancing opportunities for public involvement. I believe that our proposal represents a reasonable approach to achieving these objectives in a manner that fairly balances the competing interests involved. In my additional written answers to your questions, I have attempted to discuss in some detail the specific shortcomings that I see in our present process, how our legislative proposal would help address these shortcomings, and how our proposal would advance the various goals of licensing reform.

I would characterize our legislative proposal as a somewhat limited refinement of our existing process that preserves all of the principal elements of that process. Beginning tomorrow, and in subsequent hearings, I suspect that you will hear from others who will argue that our proposals are too modest to bring about a resurgence in the growth of nuclear power in this country. They may well argue the need for more radical changes to streamline the present process to accomplish that purpose. That promotional perspective, although very different from our regulatory perspective, is a legitimate one. Nevertheless, I would caution against the adoption of more radical changes to the process that are likely to undermine the Commission's ability to make and enforce sound safety decisions or to deny the public an opportunity to participate in the process on significant safety and environmental issues. In my view, such changes would be harmful to the effectiveness of our program and would undermine public confidence in the regulatory process. I, therefore, believe that the principal test for judging the adequacy of our licensing reform proposals and those of others ought to be their ability to improve the effectiveness of our process and the soundness of our licensing decisions

As I mentioned at the outset, although I strongly support the Commission's licensing reform bill, there are three provisions that I would have treated differently. The first of these is the definition of the purpose of our facility licensing hearings contained in paragraph 2(a)(11) of the bill. That definition states that the only purpose of these hearings is to resolve issues of fact in dispute between the parties to the proceeding. This provision would have the effect of denying the Commission any discretion to use a facility licensing hearing to address an issue that is not in dispute between the parties. Although I agree that dispute resolution should be the principal purpose of our facility licensing hearings, I do not agree that it is the only purpose in all cases. I believe there are cases in which it would be more efficient or appropriate for the Commission to have a licensing board in an ongoing proceeding consider an issue rather than refer that issue to staff for review. That may well be the case, for example, where the issue involves allegations about failure in the staff's own reviews. Our present process provides that flexibility while at the same time assuring case-by-case Commission review of each proposal that a licensing board consider an issue not in dispute between the parties. I would preserve this flexibility by defining dispute resolution as the principal purpose rather than the only purpose of our facility licensing hearings.

The second provision that I would have treated differently is the authority of the Commission to rely on certifications of the need for the facility and the choice of alternative generating sources made by other Federal, State or regional authorities that is contained in the proposed new section 185(c) of the Atomic Energy Act. Under this provision, the Commission would be required to rely upon such a certification if the other organization that certifies to the Commission that it has the authority to make the certification, that it has procedures substantially equivalent to those used by the Commission; that it has considered alternative energy sources, and that there is an opportunity for State judicial review.

I support a provision giving the Commission the authority to rely on need for power and choice of generating means decisions by appropriate Federal, State or regional authorities.

However, I am not convinced that the certification approach will provide assurance that the decisions we would be relying upon are sound and that the certifying organization has followed the appropriate procedures. I believe a better approach would be to review and approve the program of the Federal, State, or regional organization and to require that their program be comparable to our program for making similar decisions just as we now do for Agreement States. A useful model for such an approach would be the existing section 274(o) of the Atomic Energy Act.

The third provision is the hybrid hearing provision contained in the proposed new subsections 189 (b), (c), and (d). Under this provision, hybrid hearing procedures would be discretionary rather than mandatory. I believe that the hybrid hearing process, by providing a more formal method for identifying and refining those issues that require the use of formal adjudicatory procedures for their resolution, represents an improvement over our present prehearing process. I would therefore make its use mandatory for applications for all new plants.

Thus far, Mr. Chairman, we have all focused our attention on the Commission's bill. You also have another legislative proposal before you that was prepared by DOE and submitted by the Administration. As I mentioned earlier, DOE's perspective on this issue is quite a bit different from our regulatory perspective, and there are a number of differences between our bill and theirs. I thought that I would make a few comments on two of the more significant differences and why I believe that ours is the better approach.

The first difference has to do with backfitting. The DOE bill contains a detailed provision—section 101—that would add a new backfitting provision to the Atomic Energy Act. This provision would establish a statutory standard for making backfitting decisions, would identify at least some of the criteria to be used by the Commission in making backfitting decisions, would require that all backfitting proposals be approved by the five Commissioners before they could be imposed, and would provide a very broad definition of backfitting, to include any proposed identification in the areas of engineering, construction or operation after a permit or license has been issued.

The Commission rejected the idea of a statutory backfitting provision and, instead, elected to treat the backfitting issue administratively. I believe that decision was correct for three reasons.

First, I believe we have already taken interim steps to deal with the backfitting issue administratively in the case of both generic requirements that are proposed to be applied to one or more classes of plant and plant-specific proposals.

Second, we do not yet have all the answers needed to develop a more final, long-term backfitting provision. For example, one of the difficult and as-yet unanswered questions is what baseline of existing requirements is appropriate for plants with construction permits, given the very limited information on the plant design that typically has been available at the construction permit stage.

We are beginning to examine that and other questions, but I do not believe that we now have the answers.

Third, even when this information is developed, the uncertainties may be such that we will need the flexibility to develop and continue to refine the scope of backfitting controls and the standard and criteria to be applied. That flexibility would probably not be available under a statutory provision such as that proposed by DOE.

I might add that the DOE proposal that all backfits be approved personally by the five Commissioners is likely to create a real administrative bottleneck. This aspect of the DOE proposal, together with the other elements, could well raise real obstacles to the Commission's ability to impose needed new safety requirements.

The second difference between the two bills has to do with the concept of a combined construction permit and operating license and the extent of Commission and public involvement at pre-operation stage.

Both bills would authorize the Commission to issue a combined construction permit and operating license if the applicant submitted sufficient information to issue both licenses at the same time.

Among other things, this would require the submission of a much more complete plant design prior to the start of construction than is now the case.

Under the NRC bill, an NRC review of the plant would be required prior to the commencement of plant operation, and the Commission would be required to find that the plant has been constructed and will operate in conformity with the license, the Atomic Energy Act, and the Commission's regulations. Members of the public would also be given the right to a hearing at the preoperation stage. Absent a showing of significant new information, this hearing would be limited to issues that could not have been raised in a prior hearing on the plant, its site or its design.

Under the DOE bill, the licensee would certify to the adequacy of plant construction and operation, and the plant would automatically go into operation unless, within a specified period, the Commission makes the affirmative determination that the licensee's certification is incorrect.

Also, under the DOE bill, there would be no right to a hearing at the preoperation stage, even for those issues that could not have been raised previously.

There are at least three significant types of issues that in my view, cannot be resolved at the preconstruction stage. These are quality assurance and the adequacy of plant construction; emergency planning, and the qualification and training of plant operating personnel.

Given the importance of these issues, and in light of particularly the construction quality assurance problems that have been experienced at several plants over the past few years, I believe it is most appropriate to retain both the Commission's preoperation review and an opportunity for a hearing by members of the public at the preoperation stage. For these reasons, I believe that the proposed DOE approach would be unwise in this area as well.

Finally, Mr. Chairman, just in concluding, I would add I agree in general with many of the comments Commissioner Gilinsky made particularly regarding the removal of the staff as a party. I think there is much we can do on that administratively and also to improve some elements of the industry. Finally, on the benefits of consolidation within the industry, I accept that that is a good goal, but I do see some practical difficulties in achieving that.

That concludes the comments I wanted to make.

Senator SIMPSON. Thank you very much.

Mr. Chairman and Commissioners, I think it is good for this subcommittee and this chairman to have for the record this diversity of views on issues. I think we will all gain by that. You are good to participate in that manner.

In my time in the oversight role as Chairman and Ranking Member for my first two years here, there is this continual reference to collegiality and yet one voice is not always "the" voice, and that is helpful to us in our task of oversight and whatever else is more important, and I appreciate that.

Commissioner ROBERTS. I would think that Commissioner Asselstine's comments concerning NRC's proposal is a limited refinement, and I think that is an accurate statement.

Senator SIMPSON. Did you have some further comment, Mr. Chairman? I am prepared to fire a few questions at you.

Commissioner PALLADINO. Why don't you proceed with your questions. I was just going to say that Commissioner Roberts did want to make that brief statement.

Senator SIMPSON. The legislative proposal submitted includes a number of provisions, some of which require legislation obviously, and others of which are copies through administrative changes, and some you have referred to in detail.

Then there are some issues that have been addressed in the legislative proposal by the DOE with regard to this backfitting situation. That is not included in the Commission's proposal.

If you could, Mr. Chairman, summarize those provisions that require enactment of legislation and give a very brief explanation of why it is that your proposal includes the recommendations that could be adopted through administrative changes.

Commissioner PALLADINO. Mr. Chairman, I tried to cover some of those in my opening remarks. I might add a couple that I think should be brought out.

On certain matters, particularly those that require expenditure of funds early in the process, we should have the stamp of approval by the Congress. I am thinking here primarily of standardization. If it were done only by administrative action, there could be changes that come about by changing the majority on the Nuclear Regulatory Commission that would not necessarily provide the stability that I believe that we needed.

With regard to hearings, it has been said that we could possibly change our hearing procedures without any legislative action, that it could be done by administrative action; but years of legal precedent cannot be easily overturned by administrative action. We are told by our legal people that there is high legal risk if we were to do it by administrative action. The courts might overturn us.

I think we do have an important task to do in making regulatory reforms. I am rather pleased after having heard all of the views the Commissioners have that we were able to come up with something as far-reaching as this package. It does enable through standardization—and even Commissioner Gilinsky's comments tend to support that type of approach—and does encourage the resolution of issues at an early stage of the licensing process in lieu of the present process in which the designs follow construction.

It does discuss the purpose of our licensing hearings, and I think that is an important definition. As Commissioner Ahearne and Commissioner Asselstine point out from different points of view, stating that, I think, is a very important point on the part of Congress.

I think the present process permits the same issues to be raised several times during the licensing process. I think once treated these issues ought not have to be raised, and I think our proposal deals with that issue.

You have heard a great deal on the hybrid hearing. I do think that we ought to be given a chance to try it and not necessarily have it mandated. The Commission ought to have some flexibility on this point, and that is the majority view.

I think the public is given a better opportunity to participate in these hearings by having them come in early such as would be the case in design review.

I think there are several other points that I might highlight again. One is the duplicative evaluations of need for power and alternative sources of power. I think that is an important point which our package addresses.

I think it is important to point out that there is an explicit statement in this package that would grant the Commission authority to review safety and health requirements.

Senator SIMPSON. You have covered quite a range there. Did you have a question or further comment?

Commissioner AHEARNE. Earlier I asked our general counsel what exactly are the areas in the proposed bill which could not be done by the NRC under the current statute, and I might say that is a short list: To issue a CP with no limits on when start and when finish forego a CP hearing; allow NRC to label documents; let the NRC extend the Sholly amendments to CP amendments; provide authority to issue site permits to anyone; give the authority to issue site permits unconnected to CP completion dates; to waive allocation fees, and to put the burden of proof on those opposed to renewal of, for example, the period of time for which design approval lasts.

Senator SIMPSON. I had seen that memorandum.

Let me ask this: On the backfitting issue, the Commission is now considering the issue, and I gather it intends to take some administrative action to bring some discipline to the process of imposing additional regulatory requirements on powerplants once a license has been issued.

Could you summarize, please, the proposal now being considered by the Commission; advise how that differs from what is presently in the NRC regulations; give some sense of the confidence of this Commission that this new regulation, unlike the Commission's existing regulations, might be followed by the Commission in imposing these new requirements.

Commissioner **Palladino**. Mr. Chairman, we are still in the process of addressing the backfitting issue as part of our administrative considerations.

The first step that we would take would be to direct the staff to take steps in the backfitting process that would lead to better control. I will try to summarize that portion as best I can.

Basically, it would require that, after the staff makes a proposal for backfittings, that they would have to document that and state the reasons for proposing it. That would have to be approved by the project management before it goes out to the utility.

If the utility does not think that it ought to do what is being proposed, it has an internal appeal process. If at the end of that internal appeal process the utility still feels the proposal is wrong, it can then request the NRC to justify it by detailed analysis. There are variations on that theme. As a matter of fact, there are two variations now, but I think I have summarized that part pretty well.

Now, the second step is to draft a policy that sets forth the policy considerations which the Commission is considering.

Commissioner **Gilinsky**. There is already a process in place for documenting the reasons for decisions.

Let me add that the really important question here is a safety and technical question. What additional safety does one strive for? It is not so much a rule that would be helpful, as guidance from the Commission as to what sort of improvements it thinks are appropriate and make sense, and which ones it thinks are superfluous.

Commissioner **Palladino**. Although this seems like formal procedure one would have at the NRC, there was considerable concern about whether this should be put forth. The process is not all that clear.

Commissioner **Gilinsky**. I am not saying that we should not have a more formal process, but only that there is a review process in place now.

Senator **Simpson**. Backfitting can be considered administratively now, but is it being done now?

Commissioner **Gilinsky**. I am not sure, Mr. Chairman. A lot of people say that, but when you ask someone to come in and show you which backfits should not have been required, I do not think anyone has produced a list for us. There is really just a certain amount of anecdotal data, you might say, a lot of complaints, which may well be justified, but no one has put these together in any comprehensive, systematic way.

Senator **Simpson**. Our job in oversight is to determine whether the legislation on the books works, but if they do not work, it is absurd to go back to administrative decision if one does not work.

Commissioner **Asselstine**. I think the interim measures we are now completing action on will really provide a documentary record for us as to what backfits or what proposed new requirements are being proposed and how they are being dealt with. So we will at least have an understanding of how the process works.

We are very near to putting in place, as the chairman mentioned, an interim plan for plant-specific changes, and about a year ago we put into place a process for looking at generic requirements.

These interim measures, will provide some measure of the degree of control that is now being exerted. It will also provide some specific information on matter where there is some uncertainty, such as what kind of baseline you use for plants with construction permits where you had only very limited information at the time on the design of the plant.

You mentioned our existing regulation. I just want to provide a comment on that.

We looked at section 50.109 as a possible basis for our interim measure. We considered simply directing that we wanted the staff to do an evaluation based upon section 50.109 in case of any proposed requirement. I think we generally agreed that really was not a very satisfactory basis. The wording of section 50.109 is less than clear.

In addition to that, there has been a real question of how you interpret it. For example, some people indicated in our meetings that they thought section 50.109 required a licensee to actually come in and request a review. In the absence of that kind of request, which apparently had not ever been received, no review was required. So, there is a real question of whether section 50.109 was understandable or provided any kind of a basis for a workable of interim measure. We chose an alternative approach which was simply to write an interim measure that accomplished what we felt needed to be done. That is pretty much what we put into place.

I think there are problems with section 50.109. The fact that it has not been used to actually produce reviews or assessments, I would say, is not an indication that there has not been a consideration of backfits as part of the normal regulatory process.

Senator SIMPSON. I want to clearly state my view that I do not look upon this issue of backfitting as some type of spelled relief so that it suddenly becomes an escape hatch for things that should be done. That is not the way I look at backfitting. Backfitting is a very real part of it, and it is not addressed by this chairman of oversight as just something to bring vast relief. The issue is a very real one in my mind and in some aspects becomes tedious. In the beginning we require a shorter design posture with little design, and then it is kind of design as you go. From that comes quality deficiencies and from that comes anguish from the utilities, and from that comes an observation from the public that it does not work properly. So, I address it in that context and not in any form of some spectre of crushing overregulation with the Federal Government knocking off the nuclear power industry. I wanted you to have that little tidbit of thought from me.

I do want to ask how the Commission's proposed administrative approach differs from what the DOE is recommending in their proposed statutory solution to the backfitting issue?

Commissioner PALLADINO. I have not studied the matter perhaps as well as I should have to identify the differences between our administrative approach, and their legislative approach, but I gather they want to make it very difficult to get any backfitting done; whereas, I think our approach is to make it possible for the applicant to require the NRC to have a justification for the backfitting. I think that is an important fundamental point, and I think it is particularly pertinent to the comment you made that backfitting is not all bad if it has to be done to resolve a safety issue.

Maybe some of my other colleagues might be more familiar with other aspects.

Senator SIMPSON. Commissioner Roberts.

Commissioner ROBERTS. I am not sure it is accurate to state simply that the DOE makes it more difficult. They establish some standards and procedures. I do not think it is entirely accurate to characterize their proposal to make it more difficult to backfit. It tries to bring some order to the process.

Commissioner GILINSKY. Doesn't that, in fact put a lot more obstacles in the way of making backfits?

Commissioner ASSELSTINE. There are two other differences that I can spot. One, the DOE proposal requires the Commissioners themselves to sign off on every individual backfit before that backfit can take effect. Our proposal does not do that. I think that would be a big mistake.

Our proposal basically says when someone in the staff proposes a new requirement, then the licensee has the opportunity for an informal appeal within the Office of Nuclear Reactor Regulation. If that does not satisfy them, then they can submit an objection which will require that the staff prepare a written evaluation of the benefits to be obtained and the costs of imposing the proposed new requirement. The decision ultimately is made at the staff level by, for example someone in the Office Director's position on individual plants.

On generic requirements, they are made by the Executive Director for Operations and, in some cases, they come to the Commission. Having the Commissioners themselves sign off on backfits creates a potential bottleneck.

The second difference, I think, is on the scope of backfitting requirements and what was used as the baseline. As I read the DOE provision, it is very, very broad. So in essence if you impose any kind of a change having to do with the design, construction or the operation of a plant after the time when the facility first received the construction permit, that would be considered a backfit. Some of these plants obtained construction permits a good while ago, and there have been a lot of requirements the Commission has imposed on plants since that time.

It looks to me like you could read the DOE provisions as requiring the Commission to go back and look at a large number of those requirements where the staff and the agency have already reached a position that this has to be done, but where it has not been complied with as yet.

So, I think the scope is much, much broader. It looks like it would sweep in a lot of things including a lot of things we have already agreed to be done.

Senator SIMPSON. In a hearing, I think, in March, we had a majority of the Commission saying that the temporary operating license provision contained in the fiscal year 1982–83 authorization should be extended.

Is that a view still shared by a majority of the commissioners and, if so, is that the type of thing that should be included in a legislative proposal for comprehensive review of the licensing process?

Commissioner PALLADINO. I for one still think it ought to be retained. It was not an item that came up for discussion in our legislative package, but it may be worth reflecting in legislation. I think other commissioners support this view.

Commissioner GILINSKY. I supported a previous proposal that included such authority for low-power licenses. I would not go beyond that.

Commissioner ASSELSTINE. The last time we were here I said I did not support extending the temporary operating license authority because I really did not see a clear need for it. That is still my view although it might well be over the next few months that we could have a situation where it might be needed. At the present time, however, I still think the projections are that it is not necessary, and my view is some of these other changes are much more important on a long-term basis.

Senator SIMPSON. In following the Commission's deliberations on this whole package, I was interested in your discussion of the single-step licensing issue. In the letter of transmittal you pointed out that the two-stage process, the construction permit followed by an operating license, served the industry well in previous years but maybe right now may not be the most desirable approach to licensing plants. I note in the findings and purpose of the NRC, no direct reference is made to value of the single-step licensing process. What value does the Commission place on the single-step process and to what extent does the NRC proposed legislation provide for that?

Commissioner PALLADINO. I will speak for myself, Mr. Chairman. I think the one-step license does have an important implication for several reasons.

One, it would encourage the development of a well-described design and, therefore, you can address the issues right at the beginning and can assure, if it meets all the requirements, that the utility can build and operate the plant if the plant is built the way it is supposed to be.

It also permits early participation by the public on the designs and it limits the number of items that could be taken up later by saying that they should be limited only to matters that could not have been addressed at that point.

So, I think it has an important implication. It is certainly the feeling of the vendors' representatives that I have talked to that it is an essential ingredient to having them put forth the large amount of money that it takes to design a plant and have a complete design before you start the licensing process.

Commissioner ASSELSTINE. I would certainly agree with what the chairman said. I think perhaps the most important change to the process would be ways to encourage the submittal of much more complete designs before the plants start construction. That is when you have the widest range of alternatives available to you. The worst time to start worrying about a design issue is after the plant has been substantially completed, and I think this is the provision in the bill that helps encourage the submission a more complete design.

It might be fairer to characterize our provision as a one-and-a-half step licensing process rather than one-step, because we do require under our provision both an NRC review prior to plant operation and a limited opportunity for hearing on those issues that could not have been raised before. So plant operation is not automatic. It does not provide, I suspect, as much predictability in the process as some in the industry would like, and I suspect you will hear about that. But I think it does strike a fair balance between providing some greater incentive to get more complete designs and some greater predictability to the process. It also provides the real assurance before the plant goes into operation both the Commission will have been satisfied with the adequacy of the plant construction and the adequacy and the ability of the plant to operate, and the public would have retained their opportunity to get a hearing on the significant issues that simply cannot be raised before the plant is largely built.

Commissioner **Ahearne**. I think the argument for the one-step process is the bill is primarily looking for orchestration and congressional imprimatur. I do not think the one-step issue is really a big problem. There has been, in essence, a one-step process. We have the contested case. There used to be a lot of those and there was no operating license hearing. I believe if the industry were coming in with almost complete plans and original designs, and if there were solid construction and operation of nuclear power plants, we would be back to that mode. It is an interesting debate, but I do not think the success or failure of one-step will turn on any statutory provision. It will turn on whether power plants are needed, well constructed and operative.

Commissioner **Gilinsky**. I agree with Jim that the NRC's proposal strikes a fair balance, and is a reasonable one. What it does, really, is to retain the current two-step process while shifting some subjects to the earlier stage, and permitting fuller consideration of design at that stage. That could be done right now and it depends to a large extent on the industry practice.

What we are really talking about is a label, labeling that first license an operating license, even though there is going to be another review and another check and another approval. The reason that label is there is basically because it is thought to be pleasing to industry. I think it is a mistake to put it there, and the reason I am concerned about it is that it may be taken to be a real approval of operations, and to mean that the subsequent reviews and checks are to be perfunctory. That is why I do not want to see it there.

Senator **Simpson**. We talk about combined licenses and hearings. There is not one of us who is not trying to dry up or limit the public participation at the hearing level. The bill requires an applicant to submit "such information to support the issuance of both a construction permit and an operating license." Then you go through the section-by-section analysis and that means an applicant must submit an essentially complete design at the outset of the process.

Now we have some kind of level of detail required before we issue operating licenses or construction permits. We have the offer of opportunities for hearings.

Why is it that a utility applicant is unable to or apparently discouraged from, under present law, submitting more complete design information at the beginning of the process? How do we get to this point where we issue the permits on the basis of a 20-percent design and then expenditure of your time and our time and the public trauma by doing this or that for 80 percent of the construction? How did we get to that point?

Commissioner PALLADINO. Mr. Chairman, I think history can help us a little bit in that regard. I think there was a time when the AEC was trying to encourage the development of nuclear power—as an example, Shippingport—and some people felt they knew how to design these various size plants. They applied for construction permits since the process allowed two steps. They came in with their concepts, but there were many details that were not put into the design. Some of the concepts now designed were not even developed.

I remember an ACRS meeting in which I participated in which this concept of emergency core cooling had not evolved in the designs, but they did evolve.

Right now, we have learned a lot in the intervening years, and we ought to go more to the concept of a design being complete and review it than give the proposer a chance to go solve that design and make sure that it is properly constructed. I think when we speak of what is essentially complete design, we face consideration, for example, where the only things not included in the designs related to water intakes and water injection that related more to the site.

If I could make one other comment, I am a little bit concerned about using shorthand jargon when we say one-step, two-step. I think what we are proposing in this legislation is a CP/OL combined license. I look at it somewhat like the difference between authorization and appropriation when it comes to money. We are authorizing this to be constructed and to be operated if it is constructed properly, but we do have to take the last step to make sure that it has been built and then be allowed to proceed.

Senator SIMPSON. We use one-step and two-step only with Arthur Murray.

Let me ask you this: If the applicant were to submit 100 percent of the design at the outset of the process and the design were approved after hearing with every bit of public participation that there could possibly be, don't your regulations allow for complete relitigation of many of those aspects at the licensing stage?

Commissioner ASSELSTINE. It depends on who the parties are. If you had an identity of the parties, that is the same party trying to raise the same issue over and over again, I think it is likely that would be precluded under our existing rules and governing statutes. But this is not the case if there are different parties. Even where the parties are the same, there is a risk involved. There is a substantial legal question about the ability to prevent relitigation over and over again, and as a result, there has been a disincentive to submit more complete information.

Senator SIMPSON. Do we not also have the situation where a surrogate party or selectee of some former group brings exactly the same issue but under the banner of a different group? That happens, does it not?

Commissioner **Asselstine**. I do not know how frequently it happens but the potential exists to a certain extent.

Commissioner **Gilinsky**. I do not think that this is the reason applicants do not submit complete design information. I think the reason is the disinclination to spend the money up front, so to speak, and to go through the complete design when it has not been necessary, when it has just not been industry practice. If there were a complete design and it received a complete review at the NRC, it would not receive another duplicative review at the NRC. I am not sure exactly to what extent that could be relitigated in a hearing, but I would be surprised if intervenors were successful if the staff had taken an affirmative view.

Commissioner **Ahearne**. We are probably not the best people to ask why the industry has not done certain things. We can tell you from the perspective of the regulator what is coming in and what we have done in the way of influencing.

Commissioner **Gilinsky**. We have let them get away with it, and it has been easier for them not to do it.

I remember that a little over 10 years ago, not only were the applications sketchy but that entire chapters were still missing when they were submitted. At some later date, it was considered quite an advance to require a complete application. That was done about 10 years ago.

Commissioner **Palladino**. Let me clarify one point.

We have had vendors propose standardized types of plans. For example, Gessar plant is now under active consideration, and I think the staff has found it technically OK, but it still has to go out for comments yet, and we still have not acted on the provisions that would require it to be approved. But they have made efforts, and these efforts have been refined over the past several years; but whether or not it will stand up still remains to be seen.

Commissioner **Ahearne**. Senator, I would encourage you to talk to some of the people out in the free-market side.

Six years ago in another context, I had to talk to a lot of the utilities, the vendors and the A&E's, and there is a great reluctance with a dry market. The vendors were not all that interested in committing the resources even though they had the resources for submitting it to standardized design, because they felt they would lose what few sales there were to those who came in and said, "I will make it a little bit different for you."

The A&E's said they did not have the volume of business to be able to invest enough money for valid standardization unless they were able to link up tightly with a vendor in a system which then they would go as a package and, at that stage, they ran into some competitive problems.

Senator **Simpson**. I hear that. We are going to have them participate in that type of discussion, and that will be a separate hearing.

Commissioner **Palladino**. Mr. Chairman, I would suggest that also include the architect/engineers. We have had discussions with some of them, and at least one I know is looking at standardized modules.

Senator SIMPSON. Indeed, they will be part of that process. However, I think now there will be a different attitude than what there was six years ago with what has happened in the intervening time.

I am just trying to get to everyone at that table, everyone on the subcommittee and in the Congress who are interested in quality assurance, and we talk more and more about it. It just seems that if there were some way we could ease the operation so that the percentage of completed design would be greater at the front, that would be helpful. That is my view. I will listen to reasons why it would not be helpful but it certainly seems a disincentive now to submit too much if you know when you finish that you are just going to relitigate and the cast of characters may change but the issue will be relitigated. Maybe that is not true. We will find out. I would be delighted to hear why that is not so, but it is something I want to get to. I think it is something to pursue.

Commissioner AHEARNE. I think in general there are a lot of apochryphal stories that are probably true. The attitude in general of the regulatory side of the NRC would be to allow these issues to be raised. My perception is the way they have grown up over the years is not to foreclose any issue unless there are very tight reasons for it to be foreclosed.

Commissioner GILINSKY. I think it is a good idea to have the design ready at the beginning and have a thorough review and have the hearing take place once and for all.

What I was raising was the question of adding, to that design approval, an operating approval, which raises entirely different questions such as the question of the readiness of management and a lot of other issues related to construction and operation. I do not think it is appropriate to hand that out before one even starts building a plant.

Senator SIMPSON. Let me ask about this: In authorizing the Commission to rely on State determinations of the phrase "need for power" and "source of generation," this bill requires that States that undertake those determinations must use the procedures that are "substantially equivalent to the procedures used by the NRC." If the NRC tends to rely on determinations in the State areas, would it not make sense to give the States maximum flexibility to adopt these procedures if the State seems appropriate rather than imposing procedural requirements?

Commissioner PALLADINO. I think that is an attempt to indicate that they should follow procedures that are essentially those that we have to follow under NEPA where we have to have hearings on the issues rather than just have it by fiat.

Commissioner AHEARNE. My feeling would be if a State can make a finding on need for power and that would resolve it from our standpoint, if we weren't then under some other requirement of law to not accept that, but the law could be we could accept that State finding then and the procedure a State establishes, I think, would be acceptable. In my view, they are the ones who ought to be deciding what kind of power.

Commissioner ASSELSTINE. Mr. Chairman, I think the way our provision is formulated, in essense, it is saying the Commission would no longer have to carry out what NEPA now requires it to carry out if the State requires that kind of determination. To do that, I think we need some assurance that the quality of the determination we are receiving is really adequate to satisfy what is a Federal interest—the responsibility that is now required under NEPA. I think what the provision was intended to do was to provide at least some assurance that the determination would be a quality determination. And since people would not be able to be involved in our process on that issue, as they are now, at least the State would be required to provide them an opportunity to be involved at the State level. So, I think there are those two purposes behind it. I think they do favor providing at least some restriction on the approach that is used in reaching those judgments. I think that is fairly similar to the approach taken under the Agreement State program where we are looking for a compatible program or, in some cases, a program that includes comparable elements.

Commissioner PALLADINO. Whatever the process used, there ought to be opportunity for judicial review.

Senator SIMPSON. I have a couple of questions about the hybrid hearing provision recommended in the legislation. The approach you recommend here is virtually the same as was adopted in the Nuclear Waste Policy Act for use in proceedings for the expansion of spent fuel storage capacity. How far along is the Commission in implementing the hybrid hearing provisions of the waste bill, and what sort of reaction have you received from those who will be parties in those hybrid hearings?

Commissioner ASSELSTINE. I understand the staff is still working on the conforming regulations or modifications to our existing regulations to deal with the hybrid process or to put it in place. I forget when the date is that those will be submitted to us, but I do not think it is too far away. As I recall, the first case that was mentioned as a possibility was Trojan, and I believe that the staff was planning in terms of the end of the summer, like August, when we might receive an application. That application would then be eligible for the hybrid hearing process.

Senator SIMPSON. Would you furnish us a detailed status report on that, please. That would be helpful because I think if it were to be used, we want to see that it moves with speed, and I would like to know what that is.

Commissioner PALLADINO. We will do that.

[The information requested follows:]

STATUS REPORT: HYBRID HEARING PROCEDURES UNDER SECTION 134 OF THE NUCLEAR WASTE POLICY ACT

On June 2, 1983, the NRC staff submitted for Commission consideration a proposed rule to implement the so-called hybrid hearing procedures of Section 134 of the NWPA. The Office of General Counsel suggested revisions to the proposed rule on June 30, 1983. The proposal is now awaiting Commission approval, which is expected shortly.

Pursuant to Section 134 of the NWPA, applications filed after January 7, 1983 for onsite expansions of spent fuel storage capacity are eligible for hybrid hearing procedures. Four such applications have been filed to date: for Unit 3 of the Oconee facility, Units 3 and 4 of the Turkey Point facility, and the Trojan facility. All four involve requests for reracking of existing spent fuel storage pools.

The NRC staff reviewed the Oconee application and published a proposed determination of no significant hazards consideration on August 16, 1983. The staff later published its final determination of no significant hazards consideration and granted the amendment request on September 30, 1983. Because no one requested a hearing in that proceeding, the hybrid hearing provisions of Section 134 were not applicable.

The remaining three applications are currently undergoing staff review of whether significant hazards considerations are present. Based on previous expressions of public interest, the NRC staff expects that a hearing will be requested in one or more of these proceedings. Any such hearing would be subject to the provisions of Section 134 of the NWPA.

The NRC staff estimates that another five applications to expand onsite spent fuel storage capacity may be filed between now and the end of FY 1984. The reactors involved are St. Lucie Unit 2, Millstone Unit 2, Pallisades, and Peach Bottom Units 2 and 3. This estimate is based on responses from utilities concerning when they will lose full core reserve storage capability and what applications they are planning to file.

Senator SIMPSON. What sort of policy issues would you envision having to address in nonadjudicatory proceedings under that provision, and what is it that these informal procedures are being recommended for addressing these policy issues?

Commissioner PALLADINO. I am not sure I understand your question. You put the word policy in there and that made it difficult for me. I think when we are talking about hybrid hearings, we are talking primarily about case matters of a particular reactor and those generally do not involve policy matters directly. They always involve policy matters indirectly, but I could foresee situations where it is much better to get technical experts on a particular issue around a table to discuss the ramifications of a particular technical point and identify where and whether there are real areas in dispute. Whereas, now, it is attempted entirely by cross-examination, and I am not sure that is the best way.

Senator SIMPSON. Maybe I confused you in a sense. I am just asking what issues would be considered in a nonadjudicatory proceeding under the hybrid hearing form?

Commissioner PALLADINO. What issues?

Senator SIMPSON. What would you be considering in these nonadjudicatory proceedings under this new system?

Commissioner GILINSKY. I suppose we would want to go as far as we could.

My own feeling about this is it is something that should be tried, but that we should have some experience with it before we commit ourselves. That is one point on which I differed this morning with Jim who that seems to be rather more enthusiastic. I think we ought to move cautiously.

Commissioner AHEARNE. Our bill does not make it mandatory. It just gives us the option. We have had not experience in the formal sense. We have had experience with rulemaking. As the Chairman said, there are a lot of at least potential advantages in trying to get at technical issues.

At the end of that legislative part, that part that is left over that we were not able to work out, those are the issues that we go forward with in the adjudicatory process.

Commissioner ASSELSTINE. My own view of how the hybrid process would work is that the legislative type phase of the process would serve very much like our present prehearing process, but it would be a more formal process.

I share many of the views that Senator Mitchell mentioned earlier about the value of using trial-type procedures and cross-examination in resolving some disputes. I think it is very valuable and perhaps the only method in some instances of resolving factual disputes, even on technical issues.

I have noticed, for example, in looking at some legislative hearing records that we have compiled and have been looking at lately that many times what you end up with are technical people talking more in terms of conclusions than in terms of the detailed factual basis that led to those conclusions. So, you can end up with a situation with experts equally qualified on both sides of the issue reaching different conclusions.

I think the only way to get at the facts and understand the information needed to make a judgment is to put those people on the stand and cross-examine them to understand what the basis was for reaching those judgments and the assumptions that went into reaching the conclusions that they reached. Cross-examination is a very valuable tool for that purpose. That is why I would see the hybrid process as basically sending to adjudication most all of those issues where you had a clear dispute on the facts, because I think that is the best way to resolve those issues.

Commissioner AHEARNE. In light of that, I think we might recognize some of the criticisms or some of the concerns that are expressed by the review group that we had looking at the legislation.

There is a question among some of the participants in our hearings as to whether the hybrid hearing is just going to make it longer and more complicated.

Commissioner ROBERTS. I won't read it, but a problem a participant sees in this proceeding is that one emphatically thinks the hybrid hearing is going to be much more troublesome and more time-consuming than the present. He may or may not be right.

Senator SIMPSON. that will depend upon the energy of the vast attorney resources within the agency.

How many attorneys are there in the NRC now?

Commissioner PALLADINO. About 110.

Commissioner ASSELSTINE. It has been going down in the past year or so because of budgetary restrictions.

Commissioner AHEARNE. One of the budgetary reasons is about to leave.

Senator SIMPSON. Of all the things I have been involved with, like immigration, veterans affairs the environment, and judiciary, the NRC has really perfected its own administrative code of procedure far beyond what was ever intended by the rules of administrative law anywhere in any State or Federal tome. They have really developed an arcane and unbelievable legal process in the NRC. I really believe that. I am not being a smart aleck.

Commissioner ROBERTS. I share that view.

Commissioner PALLADINO. I tend to support you many times, which I think is related to this whole story.

Senator SIMPSON. There are obviously people who care as much about the health and safety as you and I, but the process has misused legalistics to overly protect based upon their own personal fears. I don't know what it is. I am no shrink, but there is something there that does not meet the reality of the public having an opportunity to express itself. Those things somehow get subverted in an extraordinary way.

I have a couple of other questions here.

Could you explain why the Commission has decided to approve the standardized facilities designs in the context of hearing proceedings rather than in a rulemaking proceeding?

Commissioner PALLADINO. I will discuss the question. I may not give you an answer.

Senator SIMPSON. We do that, so you are entitled to do that, too.

Commissioner PALLADINO. Rulemaking would be generic in nature, and I am not sure it would get us to the point of approving a particular design. In the end, I think what we are seeking is approval of a particular design by trying to make a rulemaking on jet aircraft. There are various kinds of jet aircraft, and you could make a generic finding that all jet aircraft are safe, rather than addressing whether the 747 is safer or the 1011 is safer, or what.

I would say approving on a case-by-case basis is better than trying to do it generically. I am sure others have other opinions.

Commissioner **Asselstine**. I think our present approach to considering standardized designs in the present process is to use rulemaking. However, that does not preclude us from requiring an adjudicatory hearing as part of that rulemaking process.

You are quite correct that the bill would require the conduct of a hearing either under the hybrid format or the adjudicatory format for a design approval. My own view is that that is a useful exercise in review of designs, and it preserves the type of public involvement in the process that presently exists.

Commissioner **Gilinsky**. It would seem to have a rigorous process for approving designs that can be used for many reactors, than for approving a design for one reactor.

Commissioner **Ahearne**. There is a little bit of play in the last two concepts that carried through that adjudication is so much better than the other processes, and I am not willing to do that. I think the rulemaking could be used on a generic basis.

Commissioner **Palladino**. I would not know how you would do that in the generic sense.

Commissioner **Ahearne**. If you could use a design approved anywhere in the United States, that is now generic approval.

Commissioner **Palladino**. I would call that a standardized design proposal.

Commissioner **Ahearne**. I think rulemaking would be adequate. I am not really clear on if you go to adjudicatory hearing for that kind of approval. I suspect that if it is really a standardized design, the most strongly interested local groups are not going to participate in the hearings. Say General Electric comes in for design approval and we hold a hearing in Washington probably or some other similar location, but that is a possible design to be used anywhere in the United States. You will not get the local people concerned all over the United States so, basically, you will get the Washington groups most concerned to come in, and I guess they could do that in rulemaking.

Senator **Simpson**. I have just a couple more questions.

The recent decision in the *West Chicago* case, the Seventh Circuit upheld that Commission decision to hold informal hearings in materials licensing cases which would essentially consist of written comments from the parties. Under this court's interpretation of Section 189 of the Atomic Energy Act, the section setting forth the hearing requirements, would the Commission have sufficient flexibility, and would the logic of the Court's decisions support a Commission decision to hold hybrid hearings in facility licensing cases, do you think?

Commissioner **Palladino**. I gather it is a sense of legal risk, and I am not an expert on legal risk. Maybe my general counsel can help us on this matter.

Mr. **Plaine**. I am Herzel Plaine, general counsel.

I think the problem of switching to another kind of hearing is the history of using formal adjudication for licensing unless Congress provided specifically that we could substitute informal for formal proceedings. Otherwise we would be up against precedent in using the informal process for the reactor type licenses. The legal history has been that we use the formal process under the present statute.

Commissioner ASSELSTINE. Mr. Chairman, I would agree with that. I think the fact that the Commission has consistently interpreted the Atomic Energy Act as calling for formal, on-the-record type hearings for facility licensing cases for a long period of time, coupled with the fact that the Congress has seen fit to change that in the case of applications from utilities or other licenses for spent fuel storage expansions, and with the fact that you have now had for several years legislative proposals that would change formal trial-type hearings to the hybrid hearings argue for the need for a statutory change. Add all those things up, and I think there would be a very, very great risk if the Commission tried to act administratively. I do not believe that we could use the *Chicago* case for some other new interpretation of the Atomic Energy Act on this point.

Commissioner GILINSKY. I think what you have just been told, Mr. Chairman, would be right if we were to abolish adjudicatory hearings altogether. But since in a hybrid hearing at least as I understand it, you would be talking about adjusting the threshhold for what issues would be covered in an adjudicatory type of hearing, it is my view that this change could be made administratively.

Senator SIMPSON. In October of 1981, the Commission established a committee for the review of generic requirements. We have talked about some of the generic issues. That was as a means of controlling the new generic requirements imposed on licenses. Has it been effective in carrying out its mission? Would this organization be an effective means for evaluating regulatory requirements other than generic requirements such as plant-specific orders?

I would like your thoughts on that.

Commissioner PALLADINO. I think this committee has been helping us in a number of ways. One, to make sure that we sharpen the requirements that are being proposed and to make sure that they are properly evaluated.

We have also asked in our policy and planning guidance that the executive director for operations look at similar or comparable vehicles for accomplishing the function of CRTR on specific cases rather than on generic cases alone.

Commissioner AHEARNE. I would agree with the chairman that I think it has affected the effectiveness that I see. It has been improvement of the quality of the product when the staff develops generic requirements. I think it is forcing the staff to do a much better job in presenting its position.

As far as carrying it on to the plant specific, I believe that is a difficulty that comes in where you have senior people who are really very knowledgeable, where they are spending a lot of time now on generic questions. I think if you tried to fold in all plants specific items that you are either significantly decreasing the quality of the effort, or it would become what some people have said it might become, and that is not a bottleneck on control but a bottleneck on effectiveness.

Commissioner **Palladino**. Maybe you are saying something different than you want to say. If we assign it to the CRG, if we try to assign the plant's specific items to CRG, then what you say would follow.

Commissioner **Ahearne**. That is what I was saying.

Commissioner **Palladino**. I am not sure it was all that clear.

Senator **Simpson**. I thank you, Mr. Chairman. There will be some further questions submitted in writing.

Senator Mitchell advises that he cannot return to the hearing this morning. I think his question still remains a good one for your addressing because certainly that is our purpose, too, to determine that there is an immediate need for the legislation, and you have presented it as an NRC proposal and the DOE presented theirs, and you can furnish your response to Senator Mitchell's question and the need there.

Let me just say very briefly to Commissioner Ahearne I know your term expires June 30 and, indeed, this may be the last opportunity to visit with you here, but I certainly want to tell you that I have enjoyed my time with you. We came here about the same time, you in 1978 and I came here in 1979. You have proven to be a very thoughtful and serious participant, always willing to share much, and I have enjoyed our times together. You have brought a great deal of objectivity to us and what I would call a strong centrist type of position which is very good and very helpful, and certainly your hard work and your ability to do your own homework served you well. I think you brought much to the process, and I commend you.

Commissioner **Ahearne**. Thank you, sir.

Senator **Simpson**. I believe that will conclude the hearing and we will reconvene at 10 o'clock tomorrow morning at which time we will hear from the Honorable Donald Paul Hodel, Secretary, United States Department of Energy.

[Whereupon the subcommittee was adjourned at 12:05 p.m., to reconvene at 10 a.m., Thursday, May 26, 1983.]

[A letter to Senator Mitchell and the bills, S. 893 and S. 894, follow:]

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

CHAIRMAN

September 29, 1983

The Honorable George J. Mitchell
United States Senate
Washington, D. C. 20510

Dear Senator Mitchell:

This letter responds to your letter inquiring whether the Commission has any information reflecting specific instances where the hearing process has delayed a nuclear power plant's operation, or knows of any instances of unnecessary backfit requirements.

The direct answer to your questions is in both cases no. On the details ~~of these responses, the individual~~ Commissioners have a variety of views, some of which were presented in their testimony before the Subcommittee on Energy Conservation and Power of the House Committee on Energy and Commerce on September 23, 1983 or in the information submitted to supplement the record of the hearing.

Sincerely,

Nunzio J Palladino

Nunzio J. Palladino

ROBERT T. STAFFORD, VT., CHAIRMAN
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United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, D.C. 20510

July 20, 1983

Honorable Nunzio J. Palladino
Chairman
Nuclear Regulatory Commission
1717 H Street, N. W.
Washington, D. C. 20555

Dear Mr. Chairman:

I would like to thank you for the Commissioners participation in the hearing before the Subcommittee on Nuclear Regulation on May 25, 1983, regarding the nuclear licensing reform proposals. On Thursday, July 14, 1983, the Sub-Committee held further hearings on these proposals. One of my continuing concerns about these proposals is the attempt to modify the current hearing and backfitting procedures in a way that might not serve the public interest.

In his testimony before the Subcommittee, former NRC Commissioner Peter Bradford, representing the National Association of Regulatory Utility Commissioners, stated:

> ...contrary to a popularly held myth, the public hearings aspects of the licensing process has never delayed a single nuclear powerplant's operation by a single week. Indeed, one reads the many pages of industry, NRC and DOE testimony in vain for a single specific illustration of a licensing delay (or an unnecessary backfit) that this legislation would cure.

Indeed, I have carefully reviewed your statement presented to the Subcommittee and the transcripts of that hearing and have found no such illustration.

If the Commission has information about any specific instances where the hearing process has delayed a nuclear powerplant's operation, or know of any instances of unnecessary backfit requirements, could you please supply the details so I can fully understand the nature of any problems with which we are attempting to address by this legislation.

Your prompt reply would be of great benefit to this Subcommittee's deliberations.

With best regards,

Sincerely,

George J. Mitchell

George J. Mitchell
United States Senate

II

98TH CONGRESS
1ST SESSION

S. 893

To amend the Atomic Energy Act of 1954, as amended, to improve the nuclear power plant siting and licensing process, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 23 (legislative day, MARCH 21), 1983

Mr. SIMPSON (by request) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To amend the Atomic Energy Act of 1954, as amended, to improve the nuclear power plant siting and licensing process, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Nuclear Power Plant Licensing Reform Act of 1983".

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TITLE IV—EFFECTIVE DATE

Sec. 401. Effective date.

FINDINGS AND PURPOSES

SEC. 2. (a) The Congress, recognizing that a clear and coordinated energy policy consistent with public health and safety must include an effective and efficient licensing process for siting, construction, and operation of nuclear power plants which meet applicable criteria, finds and declares that—

(1) interstate commerce is substantially affected by the siting, construction, and operation of nuclear power plants;

(2) opportunity for public participation in siting and licensing of nuclear power plants should be assured;

(3) it is efficient and in the public interest for the Nuclear Regulatory Commission, for purposes required by the National Environmental Policy Act of 1969 or other provisions of Federal law applicable to its licensing, to rely upon determinations respecting the need for, and alternative sources of, new electric generating

facilities made by competent Federal, State, or regional authorities;

(4) the licensing and construction of nuclear power plants would be facilitated and the public health and safety enhanced by the use of preapproved nuclear power plant designs, particularly standardized designs;

(5) there is a need to encourage the development and use of standardized nuclear power plant designs because such designs can benefit public health and safety by concentrating the resources of designers, engineers, and vendors on particular approaches, by stimulating standardized programs of construction practice and quality assurance, by improving the training of personnel and by fostering more effective maintenance and improved operations, and because the use of such designs can permit a more effective and efficient licensing and inspection process;

(6) the licensing process would be facilitated by procedures for the selection and approval of a site for a nuclear power plant to be accomplished in advance of a commitment to construct a particular facility of a specific design at that site;

(7) the licensing process would be facilitated if licensing decisions are made at the earliest feasible phase of the process and, if an opportunity for hearing

has been provided, licensing issues are not subject to further adjudication in the absence of a substantial evidentiary showing called for by this Act and the regulations of the Commission;

(8) all phases of the licensing process should be handled in a timely manner under procedures which, consistent with this Act and the regulations of the Commission, assure that adjudicatory procedures are only invoked where a relevant dispute can only be resolved with sufficient accuracy through such procedures;

(9) consistent with the adequate protection of the public health and safety, the common defense and security, and with the appropriate consideration of the environment, the regulatory process should provide greater stability in licensing standards and criteria for approved designs of nuclear power plants;

(10) consistent with the Commission's paramount responsibility to protect the public health and safety, and recognizing that elimination of all risk is an unattainable goal for any energy source, it is appropriate and in the public interest for the Commission to consider the economic consequences of its regulatory practices including, but not limited to, the cost of safety requirements; and

(11) the purpose of the hearings provided for in section 189 of the Atomic Energy Act of 1954 is to resolve issues of fact in dispute between the parties to the proceeding.

(b) The purposes of this Act are—

(1) to facilitate the use of preapproved sites and designs for nuclear power plants and to facilitate the development and use of standardized designs;

(2) to provide for the issuance of a combined license to construct and to operate a nuclear power plant under conditions which assure the continued protection of the public health and safety, which will be in accord with the common defense and security, and which assure appropriate consideration of the environment;

(3) to improve the stability of licensing standards and criteria for nuclear power plants and thus the finality of prior Commission licensing approvals; and

(4) to assure that adjudicatory procedures are invoked only where a relevant dispute can be resolved with sufficient accuracy through such procedures.

TITLE I—SITING AND LICENSING

CONSTRUCTION PERMITS AND OPERATING LICENSES

SEC. 101. Section 185 of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"SEC. 185. CONSTRUCTION PERMITS AND OPERATING LICENSES.—

"a. All applicants for licenses to construct or modify production or utilization facilities shall be initially granted a construction permit after the Commission has provided an opportunity for public hearing pursuant to section 189 of this Act and if the application is otherwise acceptable to the Commission. Upon the completion of the construction or modification of the facility, upon the filing of any additional information needed to bring the original application up to date, after providing an opportunity for public hearing pursuant to section 189 of this Act, and upon finding that the facility authorized has been constructed and will operate in conformity with the application as amended and in conformity with the provisions of this Act and of the regulations of the Commission, and in the absence of any good cause being shown to the Commission why the granting of an operating license would not be in accordance with the provisions of this Act, the Commission shall thereupon issue an operating license for the applicant. For all other purposes of this Act, a construction permit is a 'license'.

"b. Notwithstanding any other provision of this section, the Commission shall issue to the applicant a combined construction permit and operating license for a thermal neutron power generation facility after providing an opportunity for public hearing pursuant to section 189 of this Act, if the application contains sufficient information to support the issuance of both a construction permit and an operating license in accordance with the regulations of the Commission and to enable the Commission to make the determinations relating to the common defense and security and the public health and safety required by this Act. After issuance of a combined construction permit and operating license for a thermal neutron power generation facility, the Commission shall assure that construction is completed in conformity with the combined construction permit and operating license, consistent with the regulations of the Commission. Prior to the commencement of operation, the Commission shall publish notice of intended operation as required by section 189 a. (1)(C), and shall find that the facility has been constructed and will operate in conformity with the combined construction permit and operating license, the provisions of this Act, and the regulations of the Commission. Prior to the commencement of operation, the Commission shall also conduct a supplemental review of any issues that were not considered in prior review of the facility.

"c. In making a determination on the issuance of any permit or license under this section, the Commission shall rely upon a certification of need for the facility and of the alternative sources of generating capacity upon a verification by the certifying authority: (i) that the certification is made by a Federal, regional, or State organization that is authorized by law to do so; (ii) that in arriving at its determination, the certifying authority has used procedures substantially equivalent to those used by the Commission and described in its regulations and has provided an opportunity for public participation; (iii) that the certifying organization has considered alternative energy sources as appropriate; and (iv) that there is an opportunity for judicial review by a State of the State organization's compliance with the procedures described in this subsection. The validity of a certification and verification shall be conclusive for the purpose of any applicable provision of Federal law related to the issuance of a license or permit under this Act, shall not be the subject of a Commission proceeding and shall not be subject to Federal judicial review, provided that nothing in this subsection shall affect any other law which provides for Federal judicial review of a Federal certifying agency's action that is separate from review of the Commission's actions.

"d. The Commission shall not modify any final determination on an issue that has been considered and decided in any proceeding for the issuance of a permit or license for that facility, facility site, or approval of design for that facility under section 194, unless the proponent of the request for such action makes a substantial evidentiary showing as defined in subsection 11 bb. of this Act and in accordance with procedures established by the Commission that such action is required to comply with this Act, other provisions of Federal law, or the Commission's regulations.

"e. Nothing in this section shall affect State authority over the regulation of radiological hazards.".

SEC. 102. Section 189 of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"SEC. 189. HEARINGS AND JUDICIAL REVIEW.—

"a. (1) In any proceeding under this Act, for the granting, suspending, revoking, renewing or amending of any license or construction permit, site permit, facility design approval, combined construction permit and operating license, or application to transfer control, and in any proceeding for the issuance or modification of regulations dealing with the activities of licensees, and in any proceeding for the payment of compensation, an award, or royalties under sections 153, 157, 186c., or 188, the Commission shall grant a hearing upon the request of any person whose interest may be affected by the proceeding, and shall admit any such person as a party to such proceeding.

"(A) The Commission shall publish notice in the Federal Register within thirty days after the docketing of any application: (1) under section 103 or 104b. for a construction permit or operating license for a facility, or for a license to manufacture a facility; under section 193 for a site permit or a renewal thereof; under section 194 for a facility design approval or a renewal thereof, and under section 185 for a combined construction permit and operating license; (2) under section 104c. for a construction permit or operating license; and (3) for an amendment to any of the foregoing, except as otherwise provided in subsection 189a.(2).

"(B) Within thirty days after the docketing of any application under section 194 for the approval of a facility design, or for an amendment or renewal of an approved design, the Commission shall give public notice by publishing notice twice in major newspapers having national circulation. At least sixty days prior to the granting of any application under section 194 the Commission shall also give such public notice which advises that the Commission is considering granting the application.

"(C) The Commission shall also publish in the Federal Register at least one year prior to commencement of operation of any facility for which a combined construction permit and operating license has been issued, a notice that commencement of operation is expected to take place and that the Commission will grant a hearing in accordance with subparagraph (D) below upon the request of any person whose interest may be affected by such operation. The Commission shall grant a hearing upon such request, and shall admit any such person as a party to the proceeding.

"(D) Any hearing required by this section for a production or utilization facility shall be limited to issues that were not and could not have been considered and decided in a prior proceeding before the Commission for that facility, facility site, or approval of a design for that facility under section 194, unless the proponent of the hearing request makes a substantial evidentiary showing as defined in subsection 11 bb. of this Act and in accordance with procedures established by the Commission that significant new information relevant to the issue has been discovered since the prior proceeding and that as a result thereof it is likely that the facility will not comply with this Act, other provisions of Federal law, or the Commission's regulations.

"(2)(A) The Commission may issue and make immediately effective any amendment to an operating license, a combined construction permit and operating license, a construction permit, a design approval or a site permit upon a determination by the Commission that such amendment involves no significant hazards consideration, notwithstanding the pendency before the Commission of a request for a hearing from any person. Such amendment may be issued and made immediately effective in advance of the holding and completion of any required hearing. In determining under this section whether such amendment involves no significant hazards consideration, the Commission shall consult with the

State in which the facility involved is located. In all other respects such amendment shall meet the requirements of this Act.

"(B) The Commission shall periodically (but not less frequently than once every thirty days) publish notice of any amendments issued, or proposed to be issued, as provided in subparagraph (A). Each such notice shall include all amendments issued, or proposed to be issued, since the date of publication of the last such periodic notice. Such notice shall, with respect to each amendment or proposed amendment, (i) identify the facility involved; and (ii) provide a brief description of such amendment. Nothing in this subsection shall be construed to delay the effective date of any amendment.

"(C) The Commission shall, during the ninety-day period following the effective date of this paragraph, promulgate regulations establishing (i) standards for determining whether any amendment to an operating license involves no significant hazards consideration; (ii) criteria for providing or, in emergency situations, dispensing with prior notice and reasonable opportunity for public comment on any such determination, which criteria shall take into account the exigency of the need for the amendment involved; and (iii) procedures for consultation on any such determination with the State in which the facility involved is located.

"b. The Commission may conduct hybrid hearings consistent with subsections c. and d. of this section.

"c. In any Commission hybrid hearing pursuant to this section on an application for a license to construct or to operate a production or utilization facility, for the issuance of a site permit, for the approval of a facility design, or for the issuance of a combined construction permit and operating license, or for an amendment to or the renewal of any such license or approval filed after the date of enactment of this subsection, the Commission shall first provide the parties to the proceeding an opportunity to submit for the record written data, views, or arguments as the Commission may specify. At the request of any party, the Commission shall provide an opportunity for oral argument with respect to any matter identified in the written submissions which it determines to be in controversy among the parties. The oral argument shall be preceded by such discovery procedures as the rules of the Commission shall provide. The Commission shall require each moving party to submit in written form, at the time of oral argument all the evidence upon which that party proposes to rely that is known at such time to that party.

"d.(1) At the conclusion of any oral argument under subsection c. of this section, the Commission shall designate any disputed question of fact, together with any remaining questions of law, for resolution in an adjudicatory hearing only if it is determined that—

"(A) there is a genuine and substantial dispute of fact which can only be resolved with sufficient accuracy by the introduction of reliable and specifically identified evidence in an adjudicatory hearing; and

"(B) the decision of the Commission is likely to depend in whole or in part on the resolution of such dispute.

"(2) In making a determination under this subsection, the Commission shall designate in writing the specific facts that are in genuine and substantial dispute, the reason why the decision of the agency is likely to depend on the resolution of such facts, and the reason why an adjudicatory hearing is necessary to resolve the dispute.

"e. Any final order entered in any proceeding of the kind specified in this section shall be subject to judicial review in the manner prescribed in the Act of December 29, 1950, as amended (ch. 1189, 64 Stat. 1129), and to the provisions of section 10 of the Administrative Procedure Act, as amended.".

EARLY SITE REVIEW

SEC. 103. The Atomic Energy Act of 1954, as amended, is amended by adding a new section 193 to read as follows:

"SEC. 193. EARLY SITE REVIEW.—

"a. The Commission is authorized to issue a site permit for approval of a site or sites for one or more production or utilization facilities for a period of ten years upon the application of any person or entity notwithstanding the fact that no application for a construction permit or a combined construction permit and operating license for such facility or facilities has been filed. The Commission may issue a site permit with respect to limited aspects of the suitability of the site for its intended purpose, under relevant regulations of the Commission. For all purposes of this Act, a site permit is a 'license'.

"b. Notwithstanding section 161 w. of this Act or the Independent Offices Appropriation Act of 1952, no application filing or issuance fees shall be required for an application for a site permit, an amendment, or a renewal of a site permit under this section. The Commission is authorized to allocate the costs that would otherwise have been defrayed by fees required of applicants under this section among applicants for permits or licenses which propose to use the approved site in a manner that will assure full cost recovery by the Commission. If no application for construction of a production or utilization facility is filed within the initial ten-year approval period, any outstanding fee shall become immediately due and payable by the applicant for the site permit.

"c. After considering all information submitted in the application and after providing an opportunity for hearing pursuant to section 189 of this Act, the Commission shall issue a site permit if it determines that such approval will not be inimical to the common defense and security or to the health and safety of the public.

"d. (1) A site permit issued by the Commission under this section may be referenced in an application for a construction permit or a combined construction permit and operating license which meets the conditions of the site permit and is filed within the period during which the site permit remains valid.

"(2) No less than twelve or more than thirty-six months prior to the expiration of the ten year period, the holder or the site permit may apply for a renewal of the site permit. The Commission shall renew the site permit for an additional period of time of not less than five nor more than ten years from the date of renewal unless it finds that the site will not comply with this Act or the Commission's regulations. If no application for a production or utilization facility is filed within the period of renewal, any outstanding fee for the renewal application or issuance shall become due and payable by the applicant for the site permit.

"e. Approval of a site under this section shall not preclude its use as a site for an alternate or modified type of energy facility or for any other purpose. Other uses not considered in the approval may, however, affect the validity of the site permit or the conditions of its use for production or utilization facility siting as the Commission may determine.

"f. Following the issuance of a site permit under this section, and in any subsequent Commission proceeding involving a site for which a site permit has been granted under this section, the Commission shall not modify any final determination on an issue that has been considered and decided in the site permit proceeding unless the proponent of the request for such action makes a substantial evidentiary showing as defined in subsection 11 bb. of this Act and in accordance with procedures established by the Commission that such action is required to comply with this Act, other provisions of Federal law, or the Commission's regulations.".

APPROVAL OF DESIGNS

SEC. 104. The Atomic Energy Act of 1954, as amended, is amended by adding a new section 194 to read as follows:

"SEC. 194. APPROVAL OF DESIGNS.—

"a. The Commission is authorized and directed to establish procedures permitting the approval of standardized facility designs for thermal neutron power generation facilities for a period of ten years, notwithstanding the fact that no application for a construction permit or combined construction permit and operating license for such facility has been filed. The Commission may also consider, in accordance with its regulations, requests under this section for the approval of the design for any major subsystem which represents a discrete element of a thermal neutron power generation facility. For all purposes of this Act, a design approval is a 'license'.

"b. Notwithstanding section 161 w. of this Act or the Independent Offices Appropriation Act of 1952, no application filing or issuance fees shall be required for an application for a design approval, an amendment, or a renewal of an approval of a facility design under this section. The Commission is authorized to allocate the costs that would otherwise have been defrayed by fees required of applicants under this section among applicants for permits or licenses which propose to use the approved standardized plant design in a manner that will assure full cost recovery by the Commission. If no application for construction of a facility is filed within the initial ten-year approval period, any outstanding fee shall become immediately due and payable by the applicant for the design approval.

"c. After considering all information submitted in the application, and after providing an opportunity for hearing pursuant to section 189 of this Act, the Commission shall issue an approval if it determines that such approval will not be inimical to the common defense and security or to the health and safety of the public.

"d. (1) Any approval issued by the Commission under this section may be referenced in an application for a construction permit, an operating license or a combined construction permit and operating license which meets the conditions of the approval and is filed within the period during which the approval remains valid.

"(2) No less than twelve or more than thirty-six months prior to the expiration of the ten year period, the holder of the approval may apply for a renewal of the approval. The Commission shall renew the approval for an additional period of time of not less than five nor more than ten years from the date of renewal unless it finds that the design will not comply with this Act or the Commission's regulations. If no application for construction of a facility is filed within the renewal period, any outstanding fee for the renewal or issuance shall become due and payable by the applicant for the design approval.

"e. Following the issuance of a design approval under this section, and in any subsequent Commission proceeding involving a facility design for which a design approval has been granted under this section, the Commission shall not modify any final determination on an issue that has been considered and decided in the design approval proceeding unless the proponent of the request for such action makes a substantial evidentiary showing in accordance with procedures established by the Commission that such action is required to comply with this Act, other provisions of Federal law, or the Commission's regulations.

"f. (1) The Commission shall approve an amendment to a design approval issued under this section upon application by the holder of the design approval if, after providing an opportunity for hearing pursuant to section 189 of this Act, the Commission determines that the amendment will comply with this Act and the Commission's regulations.

"(2) Any amendment approved by the Commission under paragraph (1) shall apply to any application for a construction permit or combined construction permit and operating license referencing the design approval for which the amendment has been granted that is filed after the effective date of such amendment.

"(3) Any amendment approved by the Commission under paragraph (1) shall not apply to an application for a construction permit or combined construction permit and operating license referencing the design approval for which the amendment has been granted that is filed before the effective date of each amendment unless (A) the applicant requests that such amendment apply to the application, or (B) the requirements of subsection (e) are satisfied with respect to the amendment.

"g. Any application for a construction permit, an operating license or a combined construction permit and operating license or any amendment to such licenses referencing a design approval issued under this section may include a request for a variance from one or more elements of the design approval. Such requests for a variance shall be granted if the Commission determines that the variance will comply with this Act and the Commission's regulations. Any variance issued under this section shall be limited to the permit or license for which such variance has been requested.".

TITLE II—MISCELLANEOUS PROVISIONS

DEFINITIONS

SEC. 201. Section 11 of the Atomic Energy Act of 1954, as amended, is amended by relettering existing subsections bb. and cc. as subsections dd. and ee., respectively, and by adding new subsections bb. and cc. as follows:

"bb. A substantial evidentiary showing is a showing of evidence by the proponent that is sufficient to justify the conclusion that the action proposed by the proponent is required to comply with this Act, other provisions of Federal law or the Commission's regulations. In determining the sufficiency of such a showing, the Commission shall consider only the evidence of the proponent and all reasonable inferences therefrom.

"cc. 'Thermal nuclear power generation facility' means a utilization facility which is designed to produce electrical energy and in which core power is designed to be produced predominantly by thermal neutron fission.".

Sec. 202. For the purposes of this Act the term "standardized design" means a design which the Commission determines is sufficiently detailed and complete to support licensing of a commercial production or utilization facility or approval of a major portion of such a facility when referenced in an application for a construction permit or an operating license or a combined construction permit and operating license or a design approval and which is usable for a multiple number of units and/or at a multiple number of sites without reopening or repeating the review.

Sec. 203. a. The Commission shall, within one hundred and eighty days following the effective date of this section, propose regulations establishing procedures and criteria for implementing the provisions of sections 185 d., 193 f., and 194 e. of this Act for the control of the application of new requirements to any thermal neutron power generation facility licensed for construction or operation under this Act.

b. After the regulations referred to in subsection a. of this section become effective, no license, permit or approval granted under this Act for a thermal neutron power generation facility shall be modified except pursuant to such regulations.

c. Prior to the issuance of a full site permit under section 193 of the Atomic Energy Act of 1954, as amended, the Commission shall prepare an environmental impact statement pursuant to section 102(2)(C) of the National Environmental Policy Act of 1969. Pursuant to such Act, the impact statement shall consider to the extent practical all environmental impacts associated with construction and operation of the facility or facilities proposed to be constructed on the site for which the site permit is sought: *Provided, however,* That such impact statement need not contain an assessment of the need for power to be generated by the proposed facility or facilities, or of alternative generating sources.

d. The issuance of a design approval under section 194 of the Atomic Energy Act of 1954, as amended, shall not require any review pursuant to the National Environmental Policy Act of 1969.

TITLE III—CONFORMING AMENDMENTS

ANTITRUST PROVISIONS

SEC. 301. Subsection 105 c. of the Atomic Energy Act of 1954, as amended, is amended in the first sentence of paragraph (2) by inserting "and/" after the word "construct".

GENERAL PROVISIONS

SEC. 302. Section 161 o. of the Atomic Energy Act of 1954, as amended, is amended by inserting the words "or approvals authorized by sections 193 and 194" after the number "104".

LICENSE APPLICATIONS

SEC. 303. Subsection 182 b. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"b. The Advisory Committee on Reactor Safeguards shall review each application under section 103 or section 104 b. for a construction permit and/or an operating license for a facility; any application under section 104 c. for a construction permit and/or operating license for a testing facility; any application under section 104 a. or c. specifically referred to it by the Commission; any application for a site permit under section 193; any proposed approval for a facility design under section 194; any proposed authorization to commence operation under section 185 b.; and any application for an amendment to a construction permit or to an operating license under section 103 or 104 a., b., or c. or an amendment or renewal of a site permit under section 193 or an amendment or renewal of an approval for a facility design under section 194 specifically referred to it by the Commission, and shall submit a report thereon which shall be made a part of the record of the application and available to the public except to the extent that security classification prevents disclosure.".

REVOCATION

SEC. 304. Section 186 a. of the Atomic Energy Act of 1954, as amended, is amended by inserting the words "sections 182, 185, 193 and 194" after the words "required under".

TABLE OF CONTENTS

SEC. 305. The Table of Contents for the Atomic Energy Act of 1954, as amended, is amended by changing the title of section 185 to read "Construction Permits and Operating Licenses" and by adding the following after section 192:

"Sec. 193. Early Site Review.
"Sec. 194. Approval of Designs.".

TITLE IV—EFFECTIVE DATE

SEC. 401. All sections of this Act shall take effect as of the date of enactment, and shall apply to all proceedings pending as of the date of enactment or commenced on or after the date of enactment, in accordance with the terms of this Act.

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II

98TH CONGRESS
1ST SESSION

S. 894

To improve the nuclear licensing and regulatory process, to amend the Atomic Energy Act of 1954, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 23 (legislative day, MARCH 21), 1983

Mr. SIMPSON (by request) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To improve the nuclear licensing and regulatory process, to amend the Atomic Energy Act of 1954, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Nuclear Licensing and Regulatory Reform Act of 1983".

TABLE OF CONTENTS

Sec. 2. Findings and purposes.

TITLE I—LICENSING AND REGULATORY PROCESS

Sec. 101. Backfitting requirements.
Sec. 102. Construction permits, operating licenses, and construction and operating licenses.
Sec. 103. Hearings.
Sec. 104. Early site approval.
Sec. 105. Approval of designs.
Sec. 106. Amendments and deviations at request of holder.

Sec. 107. License application review.
Sec. 108. Additional transitional provisions.
Sec. 109. Safety goal reports.

TITLE II—CONFORMING AMENDMENTS

Sec. 201. Advisory Committee on Reactor Safeguards.
Sec. 202. Antitrust provisions.
Sec. 203. General provisions.
Sec. 204. Revocation.
Sec. 205. Modification of license.
Sec. 206. Atomic Safety and Licensing Board.
Sec. 207. Other conforming amendments.

FINDINGS AND PURPOSES

SEC. 2. (a) The Congress, recognizing that an effective and efficient licensing and regulatory process for siting, construction, and operation of nuclear powerplants meeting safety and environmental criteria is in the national interest, finds and declares that—

(1) interstate commerce is substantially affected by the siting, construction, and operation of nuclear powerplants;

(2) meaningful public participation in siting and licensing of nuclear powerplants should be assured;

(3) determinations respecting the need for the power to be generated by new nuclear powerplants should be made by State or local authorities, where possible, and not by the Federal Government;

(4) siting and construction of nuclear powerplants would be facilitated and the public health and safety enhanced by the use of preapproved nuclear power re-

actor designs which reduce the need for individual reactor licensing reviews;

(5) siting of nuclear powerplants would be facilitated by early review and approval of the suitability of sites;

(6) siting, construction, and operation of nuclear powerplants would be facilitated by use of a single-step licensing process; and

(7) the Nuclear Regulatory Commission should continue to exercise its independent statutory responsibilities to protect the public health and safety and the common defense and security, taking into account that absolute safety is an unattainable goal for any energy source, that the cost of additional safety requirements should be given consideration, and that adequate protection of the health and safety of the public, in accordance with high standards established by the Commission, is the paramount consideration.

(b) The purposes of this Act are—

(1) to improve the effectiveness and efficiency of the nuclear powerplant licensing and regulatory process, consistent with the paramount responsibility of the Nuclear Regulatory Commission to protect the health and safety of the public;

(2) to protect the public interest and ensure meaningful public participation in the nuclear licensing and regulatory process;

(3) to recognize the interests of the States and local authorities in the nuclear licensing and regulatory process;

(4) to facilitate the use of preapproved sites and designs for nuclear powerplants; and

(5) to provide for a single-step licensing process for nuclear powerplants under conditions which assure the continued protection of the public health and safety, which will be in accord with the common defense and security, and which assure appropriate consideration of the environment.

TITLE I—LICENSING AND REGULATORY PROCESS

BACKFITTING REQUIREMENTS

SEC. 101. The Atomic Energy Act of 1954 is amended by adding after section 29 a new section 29a to read as follows:

SEC. 29a. BACKFITTING REQUIREMENTS.—

"a. The Commission shall adopt regulations establishing procedures for centralized review by the Commission of all Commission staff proposals for backfitting requirements.

"b. (1) The Commission shall adopt regulations setting forth criteria to be used in review and approval of proposed backfitting requirements under subsection a. of this section. The regulations shall require evaluation of the safety or security concerns which give rise to the proposal, the improvements in safety that would result from adoption of the proposal, estimates of costs to potentially affected licensees in implementing the proposal, and other matters the Commission determines to be necessary.

"(2) The Commission shall not approve a proposed backfitting requirement under subsection a. of this section unless, based on the criteria in paragraph (1) of this subsection, the Commission determines that the proposed backfitting requirement will substantially enhance the public health and safety or the common defense and security as a result of improved overall safety of facility operation and that this improvement in overall safety is justified when considered over the remaining life of the facility. Approval of a proposed backfitting requirement by the Commission under subsection a. of this section is not delegable.

"(3) Any action taken by the Commission under paragraph (2) of this subsection shall not be subject to section 181 or 189 of this Act or section 10 of the Administrative Procedure Act, and shall not be subject to judicial review in any manner.

"c. As used in this section, "backfitting requirement" means an addition, deletion, or modification to those aspects of the engineering, construction, or operation of a production or utilization facility upon which a permit, license, or approval was issued.

"d. A proposed backfitting requirement approved under subsection a. of this section or proposed by any other person except the holder of a permit, license, or design approval is not effective until it is issued by the Commission as an amendment to a permit, license, or design approval, or as a rule, regulation, order or amendment thereof. The Commission shall not issue a backfitting requirement under this subsection until it determines that the backfitting requirement meets the test set out in paragraph b.(2) of this section.

"e. This section shall not apply to the application by the Commission of a backfitting requirement to facilities, sites approved under section 193 of this Act, or designs approved under section 194 of this Act, if the Commission determines that absent immediate action to impose the requirement, the public health and safety or the common defense and security will not be adequately protected.".

"f. The Commission may apply the requirements of this section to analyses and testing requirements proposed by the Commission staff.".

SEC. 102. Section 185 of the Atomic Energy Act of 1954 (42 U.S.C. § 2235) and its catchline are amended to read as follows:

"SEC. 185. CONSTRUCTION PERMITS, OPERATING LICENSES, AND CONSTRUCTION AND OPERATING LICENSES.—

"a. An applicant for a license to construct or modify a production or utilization facility shall, if the application is otherwise acceptable to the Commission, be initially granted a construction permit. Upon the filing of additional information by the applicant needed to bring the original application up to date, the Commission shall issue an operating license to the applicant upon finding that the facility authorized has been constructed and will operate in conformity with the application as amended, the provisions of this Act, and the rules and regulations of the Commission. For all other purposes of this act, a construction permit is a 'license'.

"b. (1) The Commission may issue a construction and operating license to an applicant for a commercial production or utilization facility, if the application is sufficient to enable the Commission to determine that the facility will be constructed and will operate in conformity with the application, the provisions of this Act, and the rules and regulations of the Commission. For all other purposes of this Act, a construction and operating license is a 'license'.

"(2)(A) Before commencing operation, the holder of a construction and operating license shall certify to the Commission that the facility has been constructed and will operate in conformity with the construction and operating license, the provisions of this Act, and the rules and regulations of the Commission. Upon the receipt of this certification, the Commission shall publish in the Federal Register a notice of receipt. The notice shall provide a thirty-day period during which any person may comment on the certification.

"(B) Within forty-five days after publication of the notice of receipt in the Federal Register under subparagraph (A), the Commission staff shall review the certification and any comments received during the public comment period and report to the Commission concerning whether the certification is correct and whether operation should be allowed, prohibited, or limited.

"(C) Within thirty days after the submittal to the Commission of the staff report under subparagraph (B), the Commission may issue and publish in the Federal Register an order prohibiting or limiting operation if it determines that the licensee certification is incorrect. Unless the Commission issues and publishes such an order within the thirty-day period, the licensee may commence operation, fourteen days after the expiration of this period. A legal action challenging the validity of Commission action or inaction under this section must be brought, if at all, during this fourteen-day period.

"(D) Any action by the staff under section 185 b. (2)(B) of this act or by the Commission under section 185 b. (2)(C) of this Act is not subject to sections 181 or 189 of this Act. Commission action or inaction under section 185 b. (2)(C) of this Act is subject to judicial review in the manner prescribed in the Act of December 29, 1950 (ch. 1189, 64 Stat. 1129) and is subject to section 10 of the Administrative Procedure Act.

"c. The Commission shall provide for onsite inspection of construction to ensure conformity with the provisions of this Act, the application as amended, the construction permit or construction and operating license, and the rules and regulations of the Commission.

"d. The State in which a facility is to be located, a political subdivision of the State having direct authority over electric generating facilities within its jurisdiction, or another authorized public entity shall certify to the Commission the need for the power to be provided by the facility if the State, political subdivision, or public entity is required by law to make a determination concerning that need. This certification shall be binding upon the Commission, which shall incorporate the certification in its environmental impact statement pertaining to the facility. The certification is valid for purposes of the National Environmental Policy Act of 1969 only if it is valid under the law which requires the State, political subdivision, or public entity to make the determination of need. If no State, political subdivision, or other public entity is required to make this certification, the Commission shall certify the need for the power to be provided by the facility. The certification under this subsection is not subject to judicial review in a Federal court unless it is performed by the Commission or another Federal agency.

"e. The Commission may allow an applicant for a construction permit or construction and operating license for a production or utilization facility to prepare the proposed facility site for construction and perform those limited construction activities that the Commission determines to be permissible, upon determining:

"(1) that all findings required to be made by the Commission under the National Environmental Policy Act of 1969 before issuing a construction permit or a construction and operating license have been made;

"(2) that the certification under subsection d. of this section has been made;

"(3) that there is reasonable assurance on the basis of the available information and review to date that the proposed site is a suitable location for a facility of the general size and type proposed from the standpoint of the protection of the health and safety of the public; and

"(4) that there are no significant unresolved public health and safety issues with respect to the limited construction activities.

"These activities shall be conducted at the risk of the applicant and shall be subject to termination or modification by the Commission at any time. Safety-related construction activities undertaken under this subsection shall not proceed for more than one year from their commencement unless the Commission, upon good cause shown, extends this period.

"f. This section does not affect the authority of any State or local governmental unit to issue any permit or license for the siting, construction or operation of a production or utilization facility.

"g. This section does not affect the requirement that the antitrust review under this Act be completed before the issuance of a construction permit or a construction and operating license, including where necessary a hearing on antitrust issues under sections 105 c. and 189 of this Act.".

HEARINGS

SEC. 103. Section 189 of the Atomic Energy Act of 1954 (42 U.S.C. 2239) is amended as follows:

(a) Section 189 a. (1) is amended to read as follows:

"a. (1) Except as provided in section 126 of this Act, this section applies to the following proceedings:

"(A) to grant, suspend, amend, revoke, or renew a license, construction permit, construction and operating license, site permit, or application to transfer control;

"(B) to establish the compensation, award, or royalties under sections 153, 157, 186 c., or 188 of this Act;

"(C) to authorize preparation of a facility site or performance of limited construction activities under section 185 e. of this Act; or

"(D) to grant, suspend, amend, revoke, or renew an approval of a facility design or major subsystem thereof.".

(b) Section 189 a. (2) is redesignated section 189 a. (6), and is amended by inserting "or construction and operating license" after "operating license" wherever it occurs.

(c) New sections 189 a. (2), (3), (4) and (5) are added after section 189 a. (1), to read as follows:

"(2) Except as provided in paragraph (4) of this subsection, no less than thirty days after publication of a notice by the Commission in the Federal Register, the hearing officer shall provide any person an opportunity to submit for the record written data, views, or arguments in a proceeding under this section. Upon petition of a person whose interest may be affected by this proceeding, the hearing officer shall grant an opportunity for oral presentation on any issue as to which the petitioner sets forth, with reasonable specificity, his contentions and the bases for those contentions. The hearing officer shall admit that person as a party to the proceeding. The oral presentation shall be preceded by discovery procedures that the rules of the Commission may provide. Each party shall submit in written form, before oral presentation, within the time prescribed by the hearing officer, all the facts and arguments upon which that party proposes to rely.

"(3)(A) Following the conclusion of oral presentation, each party shall submit to the hearing officer, in written form, proposed findings setting forth the issues which it believes require a formal hearing and the reasons why it believes a formal hearing is required as to these issues. The hearing officer shall then consider all proposed findings, written submissions, and oral presentations and shall designate, as to those issues which have been included in a party's proposed findings, which issues require a formal hearing, conducted under sections 554, 556, 557, and 558 of title 5, United States Code, and which issues do not require a formal hearing.

"(B) The Commission shall review the designations made by the hearing officer, the proposed findings, the written submissions, and oral presentations. The Commission shall then decide, as to those issues which have been designated by the hearing officer, which issues require a formal hearing, conducted under sections 554, 556, 557, and 558 of title 5, United States Code, and which issues do not require a formal hearing.

"(C) The hearing officer shall designate an issue for formal hearing, and the Commission shall decide that a formal hearing is required as to the issue, if—

"(i) the issue consists of a genuine and substantial dispute of fact which can be resolved with sufficient accuracy only by introduction of evidence at a formal hearing; and

"(ii) the decision of the hearing officer or the Commission is likely to depend in whole or in part on the resolution of this dispute.

A hearing officer designation or Commission decision that a formal hearing is or is not required shall be in writing and shall state the reasons upon which it is based. The Commission decision is not subject to judicial review under section 189 b. of this Act until the proceeding which is the subject of the hearing has been concluded and a final order has been entered.

"(D) If an issue has not been included in a party's proposed findings, the question of whether a formal hearing is required as to that issue is not subject to judicial review unless there are extraordinary circumstances that excuse the failure to include the issue in a party's proposed findings.

"(E) For purposes of this section, "hearing officer" means an Atomic Safety Licensing Board, administrative law judge, or other person appointed by the Commission to conduct an oral presentation or formal hearing. This paragraph shall not modify any other provision of law.

"(4)(A) With respect to any proceeding for which the Commission issued a notice of hearing before the effective date of this Act, the Commission may apply the procedures set forth in this section, the procedures in effect for that hearing prior to the effective date of this Act, or other appropriate procedures authorized by law. A Commission decision under this paragraph is not delegable.

"(B) A hearing in a proceeding under chapter 18 of this Act shall be conducted in accordance with sections 554, 556, 557, and 558 of title 5, United States Code.

"(5) In an oral presentation or formal hearing under this section, the Commission shall implement, by rule, regulation, or order, the following limitations on admission of information:

"(A) on issues that have not been raised and resolved in other proceedings under this Act, no information shall be admitted unless it is significant, relevant, material, and concerns the protection of the public health and safety or the common defense and security from overall plant operation;

"(B) subject to paragraphs (C) and (D), no other information shall be admitted, on issues that have been raised and resolved in other proceedings under this Act, until significant new information has been introduced and admitted which raises a prima facie showing that action is needed to substantially enhance the public health and safety or the common defense and security as a result of improved overall safety of facility operation and that this improvement in overall safety is justified when considered over the remaining life of the facility.

"(C) on an application to grant, suspend, amend, or revoke a construction permit, operating license or construction and operating license for a facility for which a design approval has been obtained, information concerning design issues raised and resolved in the design approval proceeding shall not be admitted unless agreed to by the applicant. Where the applicant does not agree to admit the information, it must be reviewed in a design approval proceeding under section 194.

"(D) on an application to renew a site permit or design approval, or an application by the holder of the permit, license or design approval to amend a permit, license or design approval, no other information shall be admitted, on issues that were raised and resolved in the permit, license or design approval proceeding, until significant new information has been introduced and admitted which raises a prima facie showing that the facility, site or design will not comply with this Act or the Commission's rules and regulations for protection of the public health and safety or the common defense and security.".

EARLY SITE APPROVAL

SEC. 104. The Atomic Energy Act of 1954 is amended by adding after section 192 a new section 193 to read as follows:

"SEC. 193. EARLY SITE APPROVAL.—

"a. The Commission may issue a site permit for approval of a site for one or more production or utilization facilities upon the application of any person or entity, notwithstanding the fact that an application for a construction permit or a combined construction permit and operating license for the facility or facilities has not been filed. For all other purposes of this Act, a site permit is a 'license'.

"b. An application for a site permit shall be in writing and shall contain the information required by the Commission to determine the suitability of the site for its intended purpose, including:

"(1) the number, type, and thermal power level of the facilities that could be located on the site;

"(2) the boundaries of the site;

"(3) the proposed general location of each facility on the site;

"(4) the proposed maximum levels of radiological and thermal effluents that each facility would produce;

"(5) the type of cooling systems (intake or outflow) that may be employed by each facility;

"(6) the seismic, meteorological, hydrologic and geologic characteristics of the proposed site and the population density of the area surrounding the site; and

"(7) other information that the Commission may by rule or regulation require.

"c. (1) If, after considering all information submitted by an applicant under subsection b. of this section, the Commission determines that the proposed site is suitable for the construction and operation of the facility or facilities described in the application consistent with public health and safety it shall issue a site permit subject to conditions that it considers appropriate.

"(2) In making a determination under section 193 c. (1) of this Act, the Commission shall, with respect to each of the matters specified in section 193 b. of this Act, state in writing its findings regarding the suitability of the site for the facility or facilities described in the application.

"(3) A final Commission determination on an application filed under this section is a final order of the Commission for purposes of section 189 b. of this Act.

"d. (1) A site permit shall be conclusive with respect to a facility for which an application for a construction permit or a construction and operating license is filed within a period of ten years from the date of issuance of the site permit.

"(2)(A) Not less than twelve nor more than eighteen months before the expiration of the ten-year period, a site permit holder may apply for a renewal of the site permit. Upon review by the Commission, the Commission may renew a site permit for additional ten-year periods from the date of renewal.

"(B) Upon application for renewal of a site permit, the Commission shall renew the site permit unless if finds that significant new information on the site has become available which makes it likely that the site will not comply with this Act or the Commission's rules and regulations for protection of the public health and safety or the common defense and security.

"e. An applicant for a construction permit or a construction and operating license for a production or utilization facility to be located on a site approved under section 193 a. of this Act, upon thirty days prior written notice to the Commission and to the State in which the site is located and upon publication twice in those major newspapers serving the affected area as may be reasonably calculated to notify concerned or affected persons of the scope of the intended preparation, unless otherwise ordered by the Commission or the State, may prepare the approved site for construction and perform those limited construction activities that the Commission determines are permissible. These activities shall be conducted at the risk of the applicant and are subject to modification or termination by the Commission at any time. Safety-related construction activities shall not proceed for more than one year from their commencement unless the Commission, upon good cause shown, extends the period. Nothing in this subsection affects the authority of a State or local government unit to issue a permit or license for the preparation of the site or the construction activities authorized by this subsection.

"f. For purposes of the National Environmental Policy Act of 1969, an environmental impact statement prepared in connection with the issuance of a site permit need not contain an assessment of the need for power from the facility or facilities proposed to be constructed on the site for which the site permit is sought.

"g. Approval of a site under this section does not preclude its approval or use as a site for an alternate or modified type of energy facility or for any other purpose.

"h. The Commission may issue a site permit with respect to limited aspects of the suitability of the site for its intended purpose, under rules and regulations the Commission considers appropriate.

"i. For purposes of the National Environmental Policy Act of 1969, Commission issuance of a site permit is a 'major Federal action', and the issuance of the permit is considered to significantly affect the quality of the human environment if construction and operation of a facility with the characteristics described in the permit, on the site for which the permit is issued, would have significant effects on the quality of the human environment.".

APPROVAL OF DESIGNS

SEC. 105. The Atomic Energy Act of 1954 is amended by adding after section 193, as added by this Act, a new section 194 to read as follows:

"SEC. 194. APPROVAL OF DESIGNS.—

"a. The Commission also may approve a design for a commercial production or utilization facility upon application by any person, notwithstanding the fact that an application for a construction permit or construction and operating license for the facility has not been filed.

"b. The Commission also may approve designs for any major subsystem of a commercial production or utilization facility that represents a discrete element of the facility, as defined by the Commission.

"c. Notwithstanding section 161 w. of this Act or the Independent Offices Appropriation Act of 1952, an application filing or issuance fee shall not be required for an application for approval or for an amendment or renewal of an approval of a design of a facility or major subsystem under this section. The Commission may allocate the costs that would otherwise have been defrayed by fees required of applicants under this section among applicants for permits or licenses who propose to use the approved design.

"d. (1) An approval issued by the Commission under this section is conclusive with respect to an application for a construction permit or a construction and operating license which meets any conditions of the approval and which is filed within a period of ten years from the date of issuance of the approval.

"(2)(A) Not less than twelve nor more than eighteen months prior to the expiration of the ten-year period provided under paragraph (1), the person to whom the approval was issued may apply for a renewal of the approval. Upon review by the Commission, the Commission may renew the approval for additional ten-year periods from the date of renewal.

"(B) Upon application for renewal of an approval issued under subsection a. or b. of this section, the Commission shall renew the approval unless it finds that significant new information relevant to the design has become available which makes it likely that the design will not comply with this Act or the Commission's rules and regulations for protection of the public health and safety or the common defense and security.

"e. In accordance with section 553 of title 5, United States Code, the Commission may promulgate rules that set forth standards and criteria for production or utilization facility designs and may approve designs for minor subsystems of commercial production or utilization standardized facilities, as defined by the Commission, and designs for production or utilization facilities used for other than commercial purposes.

"f. A final Commission determination on an application filed under section 194 a., b., or e. of this Act is a final order of the Commission for purposes of section 189 b. of this Act.".

AMENDMENTS AND DEVIATIONS AT REQUEST OF HOLDER

SEC. 106. The Atomic Energy Act of 1954 is amended by adding after section 194, as added by this Act, a new section 195 to read as follows:

"SEC. 195. AMENDMENTS AND DEVIATIONS AT REQUEST OF HOLDER.—

"a. The Commission shall not approve an amendment to a license, construction permit, construction and operating license, design approval, or site permit proposed by the holder of the permit, license, or approval, unless it determines that the amendment will comply with this Act and the Commission's rules and regulations for protection of the public health and safety or the common defense and security.

"b. (1) The holder of a permit, license or approval may deviate from any aspect of the permit, license or approval without prior Commission approval unless the deviation involves a change in the technical specifications incorporated in the permit, license or approval or an unreviewed safety question. A deviation shall not otherwise alter the permit, license or approval. The holder of the permit, license or approval to which the deviation applies shall maintain such records of the deviation and the basis for the determination that it does not involve a change in the technical specifications or an unreviewed safety question that the Commission may by rule or regulation require. These records shall be available for inspection by the Commission. A deviation which involves a change in the technical specifications or an unreviewed safety question shall be proposed to the Commission as an amendment under subsection a. of this section.

"(2) A deviation involves an unreviewed safety question if:

"(a) The probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the proceeding on the permit, license or approval may be increased; or

"(b) a possibility for an accident or malfunction of a different type than any evaluated previously in the proceeding on the permit, license or approval may be created; or

"(c) the margin of safety as defined in the basis for any technical specification is reduced.".

LICENSE APPLICATION REVIEW

SEC. 107. Subsection 182 b. of the Atomic Energy Act of 1954 (42 U.S.C. 2232 b.) is amended to read as follows:

"b. The Advisory Committee on Reactor Safeguards may review an application to grant, amend, or renew a license, construction permit, construction and operating license, or site permit. The Committee shall review each application for design approval, each proposed amendment or renewal of a design approval, and any application under sections 103, 104, or 193 of this Act that the Commissiion refers to the Committee. The Committee shall submit a report to the Commission on each application, design approval or proposed amendment or renewal of a rule that it reviews. The Committee decision to review or fail to review an application or proposed amendment or renewal of a design approval and the Commission decision to refer or not refer an application to the Committee, is not subject to judicial review. Except to the extent that security classification prevents disclosure, any report required by this subsection shall be made part of the record of the application or rulemaking proceeding and available to the public.".

ADDITIONAL TRANSITIONAL PROVISIONS

SEC. 108. The Atomic Energy Act of 1954 is amended by adding after section 195, as added by this Act, a new section 196 to read as follows:

"SEC. 196. ADDITIONAL TRANSITIONAL PROVISIONS.—

"a. The procedures provided in appendices M, N, O and Q of Title 10 of the Code of Federal Regulations, part 50; subpart F of part 2 of the same title; and the Commission's Topical Report Program, shall continue in effect until modified, terminated, superseded, set aside or revoked in accordance with law by the Commission.

"b. An applicant for a construction and operating license may incorporate by reference in the application a Staff Site Report issued under Appendix Q of Title 10 of the Code of Federal Regulations, part 50 or an approval of a final design issued under appendices N or O of the same part. The report or approval shall be given the same effect that the Commission provides when the report or approval is incorporated by reference in an application for a construction permit or operating license.

"c. An application for a construction permit may be converted by the applicant into an application for a construction and operating license, subject to section 185 b. of this Act. An applicant granted a construction permit may apply for a construction and operating license, subject to section 185 b. of this Act.".

SAFETY GOAL REPORT

SEC. 109. The Atomic Energy Act of 1954 is amended by adding after section 196, as added by this Act, a new section 197 to read as follows:

"SEC. 197. SAFETY GOAL REPORT—

"The Commission shall adopt and implement a safety goal, and supporting methodologies, through the issuance of those rules and regulations that the Commission considers appropriate. Within one year from the effective date of this section, the Commission shall report to the Congress on the progress it has made toward adoption and implementation of this safety goal.".

TITLE II—CONFORMING AMENDMENTS

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

SEC. 201. The second sentence of section 29 of the Atomic Energy Act of 1954 (42 U.S.C. 2039) is amended to read as follows: "The Committee, as provided in section 182 b., shall review safety studies, facility license applications, site permit applications, and design approval applications and shall make reports thereon, shall advise the Commission with regard to the hazards of proposed or existing reactor facilities and the adequacy of proposed reactor safety standards, and shall perform such other duties as the Commission may request.".

ANTITRUST PROVISIONS

SEC. 202. The first sentence of section 105 c. (2) of the Atomic Energy Act of 1954 (42 U.S.C. 2135 c. (2)) is amended by striking "a license to construct or operate" and inserting in its place "an early site permit and an application for a license to construct, operate, or construct and operate".

GENERAL PROVISIONS

SEC. 203. Section 161 o. of the Atomic Energy Act of 1954 (42 U.S.C. 2201 o.) is amended by inserting "authorized by section 193 or conducted" after "activities" the second time it occurs.

REVOCATION

SEC. 204. Section 186 a. of the Atomic Energy Act of 1954 (42 U.S.C. 2236 a.) is amended by inserting "or site permit or design approval" after "license" wherever it appears; and by inserting "or sections 193 or 194" after "section 18[illegible]".

MODIFICATION OF LICENSE

SEC. 205. Section 187 of the Atomic Energy Act of 1954 (42 U.S.C. 2237) is amended by inserting "and site permits and design approvals" after "licenses".

ATOMIC SAFETY AND LICENSING BOARD

SEC. 206. Section 191 a. of the Atomic Energy Act of 1954 (42 U.S.C. 2241 a.) is amended by deleting "or" after "license"; inserting a comma in its place; and by inserting ", or site permit or design approval" after "authorization".

OTHER CONFORMING AMENDMENTS

SEC. 207. The table of contents of the Atomic Energy Act of 1954 is amended by—

(a) adding after the item relating to section 29 the following:

"Sec. 29a. Backfitting Requirements.";

(b) striking the item relating to section 185 and inserting in its place the following:

"Sec. 185. Construction Permits, Operating Licenses, and Construction and Operating Licenses.";

and

(c) adding after the item relating to section 192 the following:

"Sec. 193. Early Site Approval.
"Sec. 194. Approval of Designs.
"Sec. 195. Amendments and Deviations at Request of Holder.
"Sec. 196. Additional Transitional Provisions.
"Sec. 197. Safety Goal Report.".

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NUCLEAR LICENSING AND REGULATORY REFORM

THURSDAY, MAY 26, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room SD-406, Dirksen Senate Office Building, Hon. Alan K. Simpson (chairman of the subcommittee) presiding.

Present: Senators Simpson and Mitchell.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Good morning.

Senator Mitchell and I welcome you this morning to continue our consideration of nuclear licensing and regulatory reform.

We began this series of hearings on licensing reform yesterday with testimony from the Nuclear Regulatory Commission and are fortunate today to have with us the very capable Secretary of Energy, Donald Paul Hodel, to present the views of the administration.

You have assumed a very tough job in the administration and I think you are preforming it most ably. You certainly bring a depth of knowledge and background which is extraordinary.

I am sure that that has been beneficial to all of us, especially when we deal with the issue of the original intent about the agency that you now head. For the benefit of those who were unable to attend yesterday, I would note that during the period following the Memorial Day recess, we will return to the issue of licensing reform in a series of hearings in which we shall hear from all interested parties.

Many people have expressed an interest in the issue and as chairman of the subcommittee, I will make every effort to hear from everyone who wishes to address the subject.

As I indicated yesterday both the NRC and the Department of Energy have submitted legislative proposals to the Congress recommending changes in the current process to achieve a more stable, effective, and efficient approach to the licensing of nuclear powerplants.

The current licensing system was established 29 years ago. It was at a time when an industry was fundamentally different than what we have today. Unfortunately, the licensing system changes in this industry. As a consequence, I think we have witnessed an erosion in the ability of the NRC and the industry to protect the public health and safety. There are those on all sides of the issue and I shan't go into detail as to the persons and groups who have reached a conclusion that the current licensing process is very difficult in its operation. That is included in my statement of yesterday.

I would refer again to that. But I do point out that the call for reform of the process rises from a very diverse range of interests, all of whom speak with a great deal of authority about the process and the consensus for reform is increasing and not decreasing if we are truly serious in our efforts to provide a greater degree of protection to the public. That is our sole reason for being here in an oversight capacity on the environment, public health and safety and this may all be a starting point.

So Secretary Hodel, I do welcome you to the hearing. I believe this is your first appearance before the Subcommittee on Nuclear Regulation. I look forward to a productive session this morning.

George, do you have anything you might wish to add at this time?

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator **Mitchell**. Very briefly, Mr. Chairman, I commend you for holding these hearings, welcome the Secretary and those associated with him.

I concur wholly in the statement of the Chairman that the primary concern must be the public health and safety and I think the great need is to restore, if possible, public confidence.

My starting point, Mr. Secretary, and a question I hope you will address, is whether or not there is in fact a need for this legislation. The existence of a problem does not, in and of itself, dictate a specific solution to that problem of delay and confusion. It is attributable to factors other than those which the proposed legislation seeks to address. That is something that I will be inquiring into in the question and answer period but I know it is something which both Senator Simpson and I feel is the threshhold question which must be addressed before we proceed to attempt to fashion a specific solution.

Beyond that, I have an open mind and hope to be able to retain it for as long as possible. When I was a judge I never decided a case before I heard both sides. I found that no matter how clear a position seemed to be, somehow there were always contrary items.

So, I look forward to your testimony and the testimony of other witnesses in the future days as we attempt to come to grips with what is a serious problem in the country and determine whether or not this is the way to deal with it.

Thank you, Mr. Chairman.

Senator **Simpson**. Thank you, very much.

Please proceed, Mr. Secretary.

STATEMENT OF HON. DONALD PAUL HODEL, SECRETARY, DEPARTMENT OF ENERGY, ACCOMPANIED BY SHELBY BREWER, ASSISTANT SECRETARY FOR NUCLEAR ENERGY, AND STEPHEN GREENLEIGH, DEPUTY GENERAL COUNSEL FOR PROGRAMS

Secretary **HODEL**. Thank you, Mr. Chairman.

Before I begin, I would like to introduce the people with me. Shelby Brewer is Assistant Secretary for Nuclear Energy sitting to my left and Stephen Greenleigh is Deputy General Counsel for programs.

Both have extensive experience with regard to nuclear licensing matters. I suspect that if we get into specific details of this legislation, I will turn for assistance to either or both sides from time to time.

I have a prepared statement, Mr. Chairman, which I would like to submit for the record, if I may, and then summarize portions of it.

Senator **SIMPSON**. Without objection, so ordered.

Secretary **HODEL**. My opening statement immediately addresses the question raised by Senator Mitchell with regard to the need for nuclear licensing reform.

We seek the reform as envisioned in S. 894 because we believe that it would sustain and enhance public health and safety and that it would make the nuclear regulatory process predictable, timely and efficient. We need a process that does not discourage investment by utilities in nuclear power by being open-ended and does not unjustly burden the electricity consumer by extending construction schedules and costs. We believe that the present process does not meet these criteria.

The current regulatory process doesn't seem to meet the needs of the public with regard to the enhancement of safety and health. We think we can enhance the participatory process. We don't think the current process meets the needs of the regulators which are essentially the same as those of the public, the needs of the consumer with regard to available electricity in a reliable fashion at a reasonable rate; or the needs of the industry to have some predictability in the process. We think these needs can be met better if we have the legislation.

In my opening statement, we relate some of the history and the current plant level. We have 83 nuclear plants presently licensed to operate and we expect this number to rise to approximately 130 plants within the next 10 years. And after the 29 years of experience to which the Chairman referred we think it is time to take a look at this process.

We think that the Federal role should be to insure the proper functioning of the institutional structure that serves our current nuclear plants: those 83 plants now licensed to operate and the 62 other plants that are under construction or planned.

The time to do that is now. We have had a hiatus in orders for the new plants, a point that has been well made, I believe. This is an excellent time to review the process. We don't have the press of plants upon us, and this is an opportunity to update and upgrade that process.

It has been recognized, we believe, by a broad spectrum of organizations that licensing reform is appropriate. There are several major studies, including the Kemeny Commission Report and the Rogovin Report that reference the need for assurance of safety and emphasize the importance of changing the licensing process to focus on issues of public health and safety and to make public participation in the process more meaningful.

I will deal with that at greater length later in this statement.

The legislation submitted by the administration, we believe, is an attempt to meet those needs. The Nuclear Regulatory Commission legislation is an effort on its part to meet the same needs. So we both perceive the need for some kind of nuclear licensing reform at this time.

There are three major objectives that we identified in putting together our proposal. One is to provide for continued improvement in the safety of nuclear power; another is to improve the effectiveness of public participation; and the third is to provide a modern, stable, and predictable licensing process.

In my opening statement, I talk about those three points in some detail.

I would like to specifically deal with the safety issue.

The importance of revising the licensing process to improve the safety of nuclear power is underscored in the Kemeny Commission report on Three Mile Island, which had as a principal finding "to prevent nuclear accidents as serious as Three Mile Island, fundamental changes will be necessary in the organization, procedures, and practices—and above all—in the attitudes of the Nuclear Regulatory Commission . . ."

The evolution of nuclear technology and the accumulation of experience with operating facilities have made possible the steady improvement of safety standards for the design, construction, and operation of nuclear powerplants.

The process for ordering the incorporation of new features in existing plants, whether in operation or under construction, is called backfitting. The current backfitting procedure has significantly lacked a disciplined focus on the achievement of demonstrable improvements in safety. Further, the current process does not require consideration of the impact of an isolated modification in one system on the performance of other systems or on the plant's overall safety performance.

The 1980 NRC report, entitled, "Survey of Licensee Viewpoints on Regulatory Activities" contained the following statement:

> It is the finding, notwithstanding the competence and good intentions of the staff, that the pace and nature of regulatory actions have created a potential safety problem of unknown dimensions.

The DOE legislative proposal contains a revision to the backfitting procedures that would help to correct these problems, and thereby enhance safety, by establishing a more orderly, focused process for determining needed modifications to nuclear plants.

As a further step toward improving the safety of nuclear powerplants (as well as reducing energy costs to the consumer), the proposed legislation authorizes the NRC to approve designs for entire plants, or for major portions of plants, in proceedings that are separate from a utility license application. This process should result in a few standard designs, as contrasted with the many customized, one-of-a-kind designs that have been presented under the current review process.

Safety will be enhanced by allowing designers, constructors, operators, and regulators to concentrate on a smaller number of standard designs, rather than a plethora of custom designs.

We believe our legislation also would enable firm decisions to be made about major design considerations at the beginning of the process rather than postponing then until the actual construction is underway or even until the plant is largely completed.

In public statements, I have likened our current process to a situation in which a utility determines it must meet future load and attempts to build the powerplant, and then the rest of our society gathers together to see how long we can delay the process from being completed.

That really is not a wise or sensible process. In the end, society pays a substantial cost in safety and in efficiency. Certainly as taxpayers or ratepayers, we end up paying that whole bill.

The waste of time, as well as the psychological impact on the labor force that results from being led to believe that the work being done today may be torn out and redone tomorrow, is not conducive to the quality construction that nuclear plants require. Thus, the ability to make early, firm decisions should not only improve the economics of nuclear power but also enhance plant safety performance as well.

We also talk in my opening statement about the effectiveness of public participation. It seems clear to me that once a plant has been substantially completed, and hundreds of millions, perhaps billions, of dollars invested in that plant, it becomes much more difficult at that stage of the proceeding for the public to have a meaningful opportunity to object to the design or the construction or the location of the plant.

It seems to me that we would be much wiser, and this is the direction we seek, to permit an early resolution of that issue and, then, as a society either to say we will not move forward with this plant, or if we do, to move forward efficiently and promptly with the least cost and with the most productive process.

The third objective is a predictable licensing process, which we think would be beneficial. Regulators are better served by a predictable process in that they can allocate their resources in a more coherent and efficient manner and, thus, more effectively fulfill their mission of assuring public health and safety. Rather than attempting to cover the waterfront, they would focus on the real issues and attempt to improve the safety performance of these plants.

There are five major elements in our proposed legislation. First, a more effective process and criteria for implementing design modifications; second, a hybrid which is both an adjudicatory and legislative hearing process that would improve the quality of public participation in the licensing procedure; third, preapproved designs; fourth, early site approval, and, fifth, one-step licensing.

In the invitation to testify, you raised the question about the possibility of implementing these procedures by administrative actions as opposed to legislation and it was raised again by Senator Mitchell. We have prepared for the record a table which compares the main provisions of the NRC and administration bill and indicates those areas that are requiring legislation.

We believe that even though the NRC may have authority in some of these areas, to bring about administrative changes, it clearly is extremely difficult for them to do so.

There is some dispute over its ability to do so. It has undertaken the commencement of that process but it is not clear that the administrative process will result in a workable system.

We believe that if there are improvements to be made in the licensing process, then, those improvements can be made best through the legislative process so that the Nuclear Regulatory Commission has an established statutory framework within which to operate.

Let me touch on the various elements that are included in our bill. The design modifications portion is a response to the fact that NRC has identified 87 different procedures by which modifications could be effected at the present time. But there is no systematic and orderly review process being used today.

The technical problems and their solutions, as I indicated before, are examined narrowly and sometimes without adequate consideration for how an isolated specific modification may affect the other systems in the plant or whether it contributes to the overall safety of the plant's performance. Proposed legislation would correct these problems by requiring the NRC to conduct a centralized review.

The hybrid hearing process, I believe, has been discussed with you by the NRC. We think that this would provide a much more focused process. We think it would provide every bit as much opportunity as we have today for public involvement but that it would reserve the adjudicatory function to be applied to those issues which are in fact in dispute.

Preapproval of design has long been talked about and the proposed legislation would authorize the approval of standard designs. We think that the standardized design would provide significant safety benefits in a variety of ways. It would allow the regulators to focus on fewer plant specific problems, it would provide greater depth of experience in a smaller number of basic designs and finally, it would provide a broader base of the generic experience of the builders and operators of the plants.

We would simply move the improvements out from the learning curve which would presumably enhance not only the efficiency but the safety as well.

Early site approval would have the clear benefit of providing either approval or disapproval of sites before significant sums of money have been committed.

Finally, the combined operating license concept has the objective of assuring a more integrated, complete, and systematic review by the NRC early in the process which would provide greater predictability and certainty for the public planners, and it certainly would provide an earlier and more meaningful participation by the public.

In your letter of invitation, Mr. Chairnan, you asked specifically what our proposed legislation would do with respect to quality assurance problems. Over the long term, we believe that the use of the standardized plant designs and the one-step licensing will improve the quality of construction and operation of nuclear plants because construction, inspection, testing, operation, and maintenance experience would be more readily transferrable from one plant to another.

We did not, however, direct a specific legislative proposal to the improvement of quality assurance in the near term. In its 1982–83 authorization for the Nuclear Regulatory Commission, Congress asked the Commission to study this specific issue, to run pilot programs, and to report back to Congress in January 1984.

We believe that review would determine the need for legislative action and it would be appropriate to follow that report with proposals for legislation at that time.

In conclusion, Mr. Chairman, I think the United States can only gain from an improved and more rational nuclear regulatory process. We think that the proposal that is before you would accomplish that. However, it would not resolve all of the problems.

I have attempted to say this to the representatives of the nuclear industry. We do not propose by this legislation to solve all of the problems that concern the nuclear industry today. But we think we would make a significant contribution to rationalizing the process by which we determine as a society, when a plant should be built, if it should be built, the manner and the design that should be employed in building it.

With that, Mr. Chairman, I would be happy to attempt to respond to your questions.

Senator SIMPSON. Thank you, very much.

Yesterday, Senator Mitchell was present for a time and oddly enough, the question he left in his absence joined with my initial question, that I know has been on the minds of the members of this subcommittee and I know others.

You touched on it. We have not had an application for a nuclear powerplant for over 4 years. Most estimates are that we won't see another one for awhile as it has been phrased. So in this situation where there are many, many reasons for that, capital formation, demand, and the myriad of things that you know so well.

Then, in light of all of that, why is it important that Congress be addressing licensing reform at this point in time?

Secretary HODEL. First of all, Mr. Chairman, I think we are ready to address licensing reform in the sense that we have the 29 years of experience. We have 83 plants licensed. We have a number of others under construction. And, I believe from that we have learned, enough to know that there are changes that are needed in the licensing process.

I can't tell you whether or when there may be further orders of nuclear powerplants, but I believe that our particular proposal really can be broken into two parts. There is a portion of it which would be applicable to existing plants and to plants under construction. There is another portion of it, the standard design portion of it, which would apply prospectively. That may or may not become significant. Backfitting portions and the hearing process portions of the proposal could be very important to the existing plants. If that constructive activity could be undertaken, we think that it would be well worth it.

Further, I think that to deal with the licensing problem at a time when there is not a great pressure of new plants being proposed—and not even in the wings so far as any of us knows—may make it easier to deal in an objective fashion with the issue. Otherwise, we may deal with the possibility that fear of a plant being sited in a particular locality would cause that locality to oppose licensing reform which may or may not have an effect on that plant.

We have an objective atmosphere in dealing with it. We clearly have the reasons for that. It would have applicability to existing plants.

Senator SIMPSON. In the testimony presented yesterday and based upon my review of this proposed legislation, I gather that what is being proposed could actually be accomplished by the NRC through administrative changes, issues such as the fact that standardization and the safety goal provisions included in your legislation are but some of those examples.

What is the advantage, if any, of addressing issues such as these in legislation rather than through administrative changes?

Secretary HODEL. First of all, I think it is apparent that changing the regulatory procedures is a very difficult process for the Commission to deal with. But they are engaging in the process. It is not clear what will emanate from the Commission even over an extended period of time. I think that is predictable because one of the arguments that will arise consistently in the Commission will be what was the legislative intent of all of the existing statutes that apply to us? Those are not totally free from dispute as to what they mean. There is some argument, I understand, about the extent of the Commission's authority in some of these areas. So it would be extremely helpful to have a legislative statement of the current policy with regard to these issues. That would be a major benefit from having the legislation approved.

Senator SIMPSON. You make an interesting statement. The legislative intent is not free from dispute. I just wanted to say amen.

I will go on to the next question.

The Department's proposal varies significantly from the NRC proposal. I would like to ask you if you would briefly comment on what you see as the major difference between the two proposals that have been presented to the subcommittee and why your department has gone further in the areas to recommend the legislation. I heard your last comments. I understand that. Again, where the Commission has recommended only administrative change, what are the major differences there and why do you perceive that?

Secretary HODEL. In the first instance, with regard to backfitting we would require the NRC to adopt regulations, establishing the procedures for a centralized review process for all Commission staff proposals for backfitting requirements. And our proposal would establish a backfit standard that must be met before the NRC can issue a new backfit. The NRC bill does not authorize that. This is one of the areas where the NRC is reviewing backfitting standards. It may well be that they have authority in this area. I think the problem may be one more of policy than of authority. But that is speculation on my part. So we would require that they adopt these standards. That is one difference.

Another difference is with regard to the one-step licensing. We would authorize the issuance of it. The NRC bill, however, would still require a subsequent hearing before the final operation of the plant that our proposal would not require. The NRC always would be permitted to hold hearings if it choose to do so, but it would not be required under our proposal.

Senator SIMPSON. You speak of the standardized design and that is going to be a very important part of the discussions in this consideration. As I understand the Department's standardized design approval provisions, your approach is based upon the review that powerplant design should have reached a sufficient degree of maturity so that it is now time to consider and encourage the standardization of design.

What interest do you perceive in the nuclear industry in pursuing the standardized design approach? What is it that the current authority available to the Commission now is insufficient to promote or foster greater design standardization? I would like your thoughts?

Secretary HODEL. I believe that there is some work now going on within the industry that Combustion Engineering and GE have moved in the direction of standard plant design. Whether they are full designs, complete in their major components I don't know, and work is also going on with the Japanese with regard to standard designs of an entire plant. I think that the language of this bill would encourage and accelerate that process. I think that the existence of the opportunity for a standard design would have a significant elevation of interest factor for the industry.

Senator SIMPSON. In your letter of transmittal you indicate that this legislation, if adopted, would result in improved opportunity for the public for effective participation in the licensing process.

Yet there are some, we will hear further testimony at a later time, who view the proposals of both this Department and the NRC as imposing limitations upon the opportunity for public participation in the licensing process.

What in particular in your mind in what DOE is proposing in this legislation is destined to improve the public's opportunity to participate in these types of proceedings?

Secretary HODEL. Mr. Chairman, I anticipated that would be a matter of concern and spent some time considering that element with regard to this proposal. It seems clear to me that in today's process there is a fair amount of similarity to what we are proposing, but there are a number of exceptions. The exceptions don't adversely affect public participation in any meaningful way. Today it is possible to ask for preliminary approval, licensing permit, and construction permit, with only a relatively small portion of the plant design completed. A person who is objecting to the plant or is concerned about safety of any particular element of that plant is in an extremely disadvantageous position today to challenge the design in any meaningful way because the designer is in the position to say, "Surely, we will take care of that between now and the time we get to the design of that component."

If 20 percent is designed at the time the permit is sought, the 80 percent not designed leaves a great deal of flexibility for handling those kinds of accusations. So it is very hard to come to any kind of adjudicatory conclusion with regard to those concerns.

Under our proposal where you have one-step licensing, we anticipate a far greater degree of design completion before this process could commence. Therefore, the critics of the plant or those concerned legitimately about safety would have a real target at which to shoot. I think that would greatly enhance the opportunity to identify adjudicatory issues to be resolved in that process.

So that is step 1.

The process itself in the first phase hearing—in the hearing we anticipate—would not significantly differ but the substance of it would differ markedly and beneficially to the public.

The other question is what about subsequent hearings? First of all, we don't foreclose that possibility although we certainly don't hope that under our approach they would be necessary in many instances. If the plant is built in accordance with the design approved in a one-step licensing process under our bill, it is more determinable because you now have a more complete design at the beginning of the process, and it is easier to check later to see if the plants have been designed and built in accordance with that design. That is quite a distinction from today where only a portion of the plant's design is available and, during the course of construction, additional design takes place. Unders today's system, the subsequent hearing is necessary to determine whether that final design was sufficient. That's quite a difference.

Today, when we get to that stage of the proceeding we have an electric utility serving the area, often where the plant has been located faced with a several billion dollar investment and a plant may or may not be allowed to operate. I am sure that those who are resisting plants which have been completed in parts of this country today can tell you tales of difficulties in trying to prevent those plants from being operated in the face of what they feel are enormous objections. The reason is there is an enormous amount of support to operate something in which some entity has invested $2 billion or $3 billion.

I think it is not very meaningful to be given the opportunity after the plant has been essentially completed to come in and object about small portions of that plant. If there is a major problem the opportunity still would exist under our bill, but the time to deal with those issues is with a more complete design up front with the site known. I think that is more meaningful.

Senator SIMPSON. Let me now defer to my colleague who I know has questions. And we will rotate back.

George?

Senator MITCHELL. Thank you, Mr. Chairman.

Mr. Secretary, back to the threshold question of the need for such legislation. In your statement you indicated that there are currently 83 nuclear plants licensed to operate and you expect the number to rise to approximately 130 plants within the next 10 years. It is my understanding that no new order has been made in the past 5 years and that over 45 orders have been canceled. What evidence is there to suggest that enactment of this legislation in the form you propose or proposed by the NRC would lead to a resurgence of orders? Do you have any specific evidence on that?

Secretary HODEL. No, I do not, Senator.

Senator MITCHELL. Has anybody said to you if this bill passes we are going to put in an order for a new plant?

Secretary HODEL. Nobody has.

Senator MITCHELL. Has anybody said that to anybody to your knowledge?

Secretary HODEL. No. Speaking for Mr. Brewer and myself, no. We have not, and I think we would have heard if that were anticipated.

Senator MITCHELL. Which at least raises the possibility that the reasons for the decline in orders and the cancellation of existing orders may go beyond the problems which this legislation seeks to address. Don't you agree?

Secretary HODEL. I do agree, and I have said as much in public speeches. I believe that this bill will not solve the problems of the nuclear industry.

Senator MITCHELL. In addition it is my understanding that the experience of the industry in completing plants has varied significantly under current procedures.

Secretary HODEL. I believe that is correct.

Senator MITCHELL. That while the average has been 10 to 12 years there have been some facilities that have been completed and ready for obtaining a license to operate in substantially less than that, several years less than that. Is that correct?

Secretary HODEL. I believe so.

Senator MITCHELL. It seems to me then to at least justify the contention that for those who have taken as long as the average or longer than the average, that the problems are not in the process which we are seeking to address here but rather in some other process. In other words, if several people can do it in 7 years that means that the process is not inherently deficient and others ought to be able to do it but for other reasons.

Secretary HODEL. Senator, you brought me along to this point, but I would like to enter a slightly different view. It seems to me that the process is defective, and probably enormously defective, if a significant number of projects of this type, at this cost, and with this significance to the health and safety of the country get as far down the road as they have gotten, and then we find that it is going to take 10 or 12 to 14 years. That is precisely the kind of point I think we are trying to make. Clearly, it can be done better. It has been done more quickly and efficiently but not in the majority of cases. The majority of cases are clearly horrible examples of delay, increased costs, and backfitting, disputes and it seems to us that there is ample evidence that something should be done to push the process in the direction of preventing that kind of thing from happening in the event there are future orders.

We can't predict that there will be for future orders. I happen to believe personally and as a matter of policy that we need to have nuclear energy as one option in the array of energy options available to this country. But I can't guarantee that anybody if we pass this bill intact today, anybody would decide as a result of that to build a plant. I think the system in place today permits the delays which have occurred and they really are not beneficial to any party.

Senator MITCHELL. The delay, in and of itself, is not beneficial but the purpose for the delay may have been beneficial. The entire backfitting controversy itself arises, does it not, from the continuing discovery of existing and therefore potentially widespread problems which through the mechanism now existing, that is now in place, we try to address? You certainly wouldn't suggest that backfitting to the extent that it is imposed safety requirements has been bad in every case.

Secretary HODEL. By no means.

Senator MITCHELL. Obviously, in many cases, if we all agree I think you said, Senator Simpson said, I said, and the Commissioners said, that public health and safety is the dominant consideration and to the extent that actions have been taken which have caused delay but have produced the benefit of enhanced public safety, then I think we would all agree in the balance of things that it was really worth it.

Secretary HODEL. That is why in our proposal we clearly continue to encourage backfitting for safety purposes. We also try to encourage the Commission to come up with standards to determine what is and what is not related to safety. That approach tries to deal with the concern and address the allegation which has been made from time to time that some of the backfitting requirements have no relation to safety or do not enhance safety and therefore are questionable. This is an argument I am sure experts can deal with at length.

Senator MITCHELL. If I may digress briefly from the immediate subject at hand, a remark that you made provokes another question. You have suggested that we should have nuclear power as one alternative in an array of energy sources. Do you feel the same way about conservation efforts?

Secretary HODEL. I surely do. In fact, Senator, I have pursued that with some diligence, but it is not a matter that is of great public interest at the present time. I am having a great deal of difficulty obtaining coverage on that issue. I spoke to the National Press Club about 4 weeks ago—one of the world's best kept secrets, I may say, because I spoke for 26 minutes on what we are doing on conservation and renewables. In fact, we received not one word of coverage on that subject.

A question I received with regard to natural gas decontrol did receive coverage. That was the total coverage. In every speech I give, without exception, I talk about the importance of conservation as a resource and of renewable energy sources, as elements in the array of energy sources. If I can digress a moment more, the responsibility of the Department of Energy, it seems to me, in the research area is to keep the pressure on all of those technologies in the hopes that one or more will achieve that breakthrough which would change the whole energy mix in the society.

In the meantime I think we also need to keep the pressure on to see to it that we have access to the conventional resources. Today, by the very point you make, we both could agree that nuclear is not prospectively a resource in the future because of a series of problems, some of which we think can be dealt with by this kind of legislation.

Senator MITCHELL. I encourage you to continue your efforts and I would also encourage you to try to persuade the President to address himself to that positive fashion. It is difficult for you and for us and for others to gain any public attention but the uniqueness of the Presidency is the ability to command public attention. I would encourage that on you.

Let me get back to the items before us. I would like to go immediately to backfitting which we have discussed. I wanted to get into a little bit more detail. You say in your answer to Senator Simpson's questions, you more or less read from the comparison of reforms that is in the table at the back of your statement and regarding backfitting you indicated that your bill requires the NRC to adopt regulations, establishing procedures for a centralized review process, the backfitting.

Then you said it also establishes a new backfit standard that must be met before the NRC can issue a new backfit. My question to you is what is that standard specifically? If you want to have one of the other gentlemen respond, you certainly may.

Secretary HODEL. I would like to ask Mr. Greenleigh if he could respond to that question.

Mr. GREENLEIGH. Under the administration bill, Senator, the proposed backfitting requirement would only be approved by the Commission if it determined that the proposed requirement would substantially enhance the public health and safety as a result of improved overall safety of the facility operations, and that this improvement in overall plant safety was justified, when considered over the remaining life of the facility. That is a broader standard than the NRC currently has in place in part 50 of its regulations, the standard by the way at least which the critics say it does not follow.

Senator MITCHELL. Your standard would have two elements: First it would enhance the public health and safety. You would have to meet that requirment first and then if it met that requirement it would have to be justified in some form of cost-benefit analysis over the remaining life of the plant.

Mr. GREENLEIGH. Correct.

Senator MITCHELL. Why do you have the word "substantially"? What is wrong with something that enhances the public safety and how is that determination to be made? It seems to me insertion of the word "substantially" carries with it the connotation of raising the threshold that something may enhance safety but it does not do it in a substantial way and therefore ought not to pass that first hurdle.

In other words, you are elevating the threshold of safety requirements within which a change can be made. It seems to me to be inconsistent with the repeated statements with which the Secretary began his statement, which Senator Simpson began his statement, with all the Commissioners began by saying the paramount concern is public health and safety. If that is the paramount, dominant concern why whould we be unwilling to authorize a change that is, enhances public safety.

Mr. GREENLEIGH. I think that is a very good question. I think when we looked at this what we were looking at of course was a plant that in view of the Nuclear Regulatory Commission was already found to be safe. We felt that in view of that fact that there needed to be this slight elevation. It would make it clear that we are talking about something more than what the Commission originally had approved and then relating that to the improvement of the overall safety of the plant itself.

Senator MITCHELL. I guess we just have a disagreement on that. It seems to me that if by definition a change enhances public safety and we all agree that public safety is the paramount concern, that the Commission ought to have the authority to require that change. That is the first point.

The second point is the cost-benefit analysis. We encounter this regularly in this committee specifically and in our society generally an extraordinarily difficult problem because almost invariably the benefits of safety and health requirements are difficult to quantify. What is the value of the human life? What is the value of a safe, clean, and healthy environment? You get maybe 100 people in this room and if you asked everyone here to write down on a piece of paper by themselves that value you would get 100 different answers. On the other hand, the cost of installing a particular piece of equipment can be quantified with precision and speed. It costs so much to do what is required. That is why a cost-benefit analysis is so difficult to implement.

Obviously in some rough fashion we as a society make calculations of that type all the time. We do it in our daily lives. But how do you propose that this cost-benefit analysis be made? Do you have a precise set of standards? Do you have some guidance for the Commission?

Mr. GREENLEIGH. No, sir. We leave that to the discretion of the Commission.

Secretary HODEL. Senator, I would like to augment that answer. With regard to "substantially enhances," it seems to me that it is up to the Commission even under our proposal to establish these standards. But the element of the word substantially applies, just as Mr. Greenleigh indicated, to the situation where not every item that may be identified as safety has any significant impact. I think your point is well taken. We make this judgment in our society over and over again. We do it with regard to building construction. I am sure that if we had a similar standard of safety for buildings that we have for nuclear powerplants we couldn't build anything taller than one story, and I am not sure about that if it had a roof on it.

So that we always make it safer, but the question is, "is it significantly safer, substantially safer? Does it add any benefit?" And I think the point is well taken that the Nuclear Regulatory Commission is not supposed to approve a plant in the first place that is not completely safe insofar as a plant can be. If a change comes along which enhances that safety in any significant way, I am sure the Commission will have no trouble saying so. One of the issues is that in looking at backfitting requirements we may have a situation where a particular bolt or nut is under review, in and of itself, and an additional thread might increase its safety slightly. But it is within a system as part of a subset of safety systems where the redundancy is such that nobody can say that it adds any significant benefit to the overall safety of that system.

That bolt might in itself be more safe. But we are suggesting that before the decision is made to go back into the plants that have that bolt with one less thread on it or one less turn, the NRC ought to take a look at the projected life of that plant otherwise and decide whether that thread adds anything to the overall safety for the plant. And I am confident that the Commission has the responsibility to make that determination and if there is any net enhancement of safety, that will be viewed as substantial.

But it ought to be net enhancement of safety. That is where the word "substantial" comes in, which clearly is to be defined by the Commission.

Senator MITCHELL. You say you are confident that a responsible Commission will act in that way but does not your bill require the unanimous approval of all five NRC Commissioners?

Mr. GREENLEIGH. No. It does not require it. What it does require, there may be some confusion——

Senator MITCHELL. The backfitting relation; that is not a requirement in your bill?

Mr. GREENLEIGH. That is correct. What it does require though is that the Commission not delegate this responsibility. What we are concerned about there is that the present regulations require a finding by NRC, which should be documented before the backfit approved. What we found is that these backfits are rarely documented by the staff. So what we are trying to do, by requiring the Commission not to delegate this responsibility is to insure that the Commission discipline the process sufficiently so that there is this documentation and the public will know whether or not a backfit is warranted.

Senator MITCHELL. I believe my time is up for now. So I will thank you gentlemen and defer to Senator Simpson. I do have some more questions which I will ask when my time comes around. Thank you, Mr. Chairman.

Senator SIMPSON. Thank you.

We are rotating our varied questioning here today.

What Senator Mitchell is asking is a very real thing. But let me ask you and I would ask Senator Mitchell if he has a thought on it because he brings a lot to this subcommittee. I appreciate it. Are we not, in your legislation under section 101, at the point where at any point in time the public health and safety is imperiled, the backfitting requirement cannot be brought to the fore? Isn't that where we are? In other words, this section that states: "* * * shall not apply to the application by the Commission of a backfitting requirement to facilities, sites approved under section 193 of this act, or designs approved under section 194 of this act, if the Commission determines that absent immediate action to impose the requirement, the public health and safety or the common defense and security will not be adequately protected."

What does that mean to you?

Secretary HODEL. To me it means that the Commission has full and free decision to determine that, if the public health and safety is not adequately protected therefore, it can impose forthwith any requirement that it chooses. It still maintains full control in that sense.

Senator SIMPSON. I have a sense, as I look at the word "backfitting," that backfitting with regard to licensing reform might have the same impact as fine-tuning under the Clean Air Act and then it would be in for a long haul.

Secretary HODEL. I am not equipped, Senator, to comment on the relation to the Clean Air Act. But perhaps I sense what you are saying. The word "backfitting" has become a catch phrase for a whole series of problems for the industry and, also, certainly for the critics of the industry. Perhaps part of what we need to do is find different language to relate to this question of Commission-ordered modifications. I think that is what we are striving to get at. What we are really trying to do is rationalize the process which today does not appear to be operating in a rational fashion on two counts.

Senator SIMPSON. I think the important thing for me in any case is to note here that if, in the backfitting area, that the public health and safety is very paramount and will remain so and that at any point in time the ability to ameliorate the impact of backfitting could cease immediately if the public health and safety were in jeopardy. That is the way I read it.

Secretary HODEL. Yes. Not only specifically in the health and safety determination, but even in the standards themselves, the Commission would determine what is significant or what is a substantial effect. What we are talking about is, again, a reasonable approach to the process which would clearly be public as Mr. Greenleigh testified, and it would require documentation to proceed. I think that provides a significant opportunity for public comment as well.

Senator SIMPSON. I think that the area of cost benefit is something that I share as a concern. But again when we come down to a plant which has already been approved on the basis of public health and safety or the construction permit would not have been issued and the operating license would not have been issued, again how far? I think it is the area of reasonableness and balance that is our job, all of us, and I find that so often this issue is public health and safety. It is very difficult to say that anyone could be against that. If there comes a time in the process, I know I will be hammered about the head and shoulders for this comment because it gets taken out of context, an example is mill tailings that we deal with in uranium. It is critical that we dispose of those.

The Government has committed itself to that. Yet we will find regulations that will come, that will require covering of mill tailings with 6 or 10 or 60 feet of cover when you go out in the sagebrush in its natural state you will find some that will fire a Geiger counter over the face of the Earth and it is about 2 inches below. So those are the problems. They will say well, that is too bad. You are going to cover it with 60 feet of overburden even though 300 yards from that is an active natural deposit of what will be yellow cake at some future time.

When you give speeches on conservation you are not supposed to do that.

I hope you won't do that again because I learned that. You are supposed to be evil basically.

You spoke of conservation as not something you should be up to. That is sarcastic, admittedly. But Senator Mitchell and I sat through the Clean Air Act and got an amendment passed by a vote of 14 to nothing and I was known as a soot-covered beast. I didn't enjoy that. Then the credibility was always startling because it would be one of us of either faith politically who would support that and then you would wander back and find the lights burning with some guy who just rented a Xerox machine and a bank of phones.

So, when I deal with nuclear, my expression to the media, and Lord knows I have been treated fairly by them, is how many in this room don't like anything about nuclear energy. Raise your hands. Now go report it but at least be honest enough to put your prejudices on the table and then try to report it objectively. That usually causes a gasp and a choking noise.

Gary Hart and I learned with Three Mile Island, that if you start with the premise that you have strident and fearful coverage and then pretend you are being objective that does not do a service to journalism, it doesn't do a service to Congress, and it certainly doesn't do a service to the people of the United States. So enough of that marvelous tidbit.

Now I have some questions again. I have only 4 more minutes to ask them.

Yesterday, the majority of the Commissioners indicated support for extension of temporary operating licensing authority now contained in the fiscal year 1982-83 NRC authorization. This bill is silent on that issue. What are your views on whether this provision should be extended? I have a hunch it will come up again and if so whether this legislation would be an appropriate vehicle for addressing that issue of temporary operating licensing authority.

Secretary **Hodel**. Let me comment very briefly, Senator, and then turn over it to Mr. Greenleigh. In my view it may well be that there will be a need for an extension of the temporary operating licensing provisions in the NRC authorization bill. I don't know whether this will be the appropriate vehicle or whether there will be another appropriate vehicle. But I would like Mr. Greenleigh to comment on that question.

Mr. **Greenleigh**. I think the question really deals with the fact that the original congressional response was to the total delay of about 90 months projected by the NRC back when this provision was put in the fiscal year 1982-83 authorization. As we understand it from the NRC, this significant delay time in granting an operating license has now evaporated. So one can argue, and perhaps the Commission or some Commissioners did yesterday, that maybe there is not a present need for extending this authority.

As you correctly indicate, the authority ends this year. However, we believe that unforseen situations can arise in the future where such authority may again be very much needed. We think it would be very desirable to keep this provision for those unforseen circumstances.

If this subcommittee and your parent committee and the Congress can break historic ground and get the nuclear licensing reform bill passed by the end of the year, maybe it would be the appropriate vehicle for this provision. But if we can't get such reform legislation passed by the time this current provision expires, then I would think the more appropriate place to put it might be in the current NRC authorization bill.

Senator SIMPSON. One more question on my round. Focusing again on the backfitting issue you recommend in your legislation that the Commission, rather than the staff, be required to decide on all backfits. What do you see as the principal advantage of having the Commission, rather than the staff, imposing backfit requirements knowing that yesterday the Commission stated that they expressed some concern that that aspect of your proposal would result in a bottleneck situation at the Commission level, perhaps impeding specific backfit requirements.

Do you share their concerns? I would like your thought.

Mr. BREWER. Mr. Chairman, if there is a disciplined analysis in quantitative screening for backfits, we feel that fewer backfits will be sent up to the Commission for approval. That is the principal point I would like to make.

The other point that I would like to make is that the Commission approves the operating license or construction permit of each applicant. Is it not proper for the Commission to approve changes to that design or to that plant as well?

Senator SIMPSON. Senator Mitchell.

Senator MITCHELL. Thank you, Mr. Chairman.

If I could pursue the question of backfitting for a moment, one of the arguments made against the proposal in your bill is that by definition the backfitting problem requires a certain degree of flexibility. In your statement, Mr. Secretary, you talked about the situation of a large number of custom design plants as opposed to a standard design, some of the Commissioners talked about that as a serious problem yesterday. That may change but at least under existing circumstances the backfitting problem therefore seems to require some degree of flexibility. Your legislation may be an effort to impose a rigidity that will have as its effect, whether or not it is the intention, of simply making it much more difficult to impose backfitting requirements when by some difference of standards that it might be desirable or necessary for society.

Do you have a comment? The whole history of flexibility seems to me a dynamic question. You said earlier that the Commission will after all have approved a plant but the whole history of this is a learning process. One of the Commissioners cited a very recent example. After 26 years they found a new problem that led to another safety requirement. That seems to be an inevitable process. What is your response to that? It is a general question I know but it is something that is raised and does trouble me.

Secretary HODEL. It comes up in two ways. It seems to me that first of all the Commission adopts the standards. We require that they adopt standards. We do not require what those standards will be. It seems to me that in the adoption of those standards what we are talking about are generic type backfitting questions. The problems that are being found I think are more of a generic nature at this stage. If you find at any given plant a specific problem, the second level response is that the Commission still always has the overall exception provided in the statute in that public health and safety provision to impose an immediate change if it chooses to do so.

And it seems to me there remains flexibility in the process. The volume of backfits presumably would not be as great simply because of applying a somewhat different standard but we think any significant safety related requirements would clearly be implemented under either of those processes.

Senator MITCHELL. Thank you, Mr. Secretary.

I would like to go to the one-step licensing and hearing provisions. They seem to me to be somewhat related. And it is, frankly, the hearing provisions of the legislation that most concern me.

Would you describe the present hearing requirements and processing and as precisely as you can the manner by which your proposal would change that?

Secretary HODEL. Perhaps to do that effectively I ought to ask Mr. Greenleigh to give us the details of it. I have an overview of it but I may leave out important parts and rather than do that, let's get to the specifics.

Mr. GREENLEIGH. As you know at the present time an adjudicatory hearing is required by the Commission in connection with the granting of a construction permit. It is not mandatory but it is or will be granted upon a request of any party in connection with the operating license. Both of those hearings are adjudicatory in nature, and cross examination is available to resolve all issues. The problem, as Secretary Hodel indicated at the outset, is that in the current process the Commission notices a hearing well in advance of the receipt by the applicant of substantial data upon which meaningful public participation can actually be brought to bear. So, parties in this kind of a process really feel in order to protect themselves they need to raise all potential contentions because they don't know what issues may be coming up. Many as it turns out, are without merit.

The administration bill would provide an opportunity for more hearings, not less. While no hearing would be mandatory, we would have hearings at the request of a party at three stages: At the early site approval stage; at the design stage; and then at the combined construction permit operating license stage where the basic issue is well framed. It is basically one issue at that point.

Senator MITCHELL. If I could interrupt, you are saying that current practice requires a hearing?

Mr. GREENLEIGH. Current practice requires a hearing at the construction permit stage. It is an adjudicatory hearing.

Senator MITCHELL. What about at a later stage?

Mr. GREENLEIGH. It is not required but if a party requests it at the operating license stage, it is granted.

Senator MITCHELL. Has it been the practice that that does occur?

Mr. GREENLEIGH. Yes.

Senator MITCHELL. So under current practice two hearings occur?

Mr. GREENLEIGH. Right.

Senator MITCHELL. You are proposing something under which it is at least within the Commission's discretion to have no hearings? Isn't that correct?

Mr. GREENLEIGH. That is correct—if not one requests a hearing.

Senator Mitchell. Then how can you say that you are creating an opportunity for more hearings?

Mr. Greenleigh. In practice, as you suggest, at the operating license stage if a party requests a hearing, it is granted.

Senator Mitchell. You could continue that?

Mr. Greenleigh. We would certainly continue that at the combined construction-permit operating-license stage. Absolutely. If the party requests it, it will be granted.

Senator Mitchell. It would be mandatory if requested or discretionary under your bill?

Mr. Greenleigh. If a party requested it, it would be mandatory.

Senator Mitchell. It would be mandatory?

Mr. Greenleigh. Yes, sir.

Senator Mitchell. The requirements defining party are the same under your legislation as they are under existing law?

Mr. Greenleigh. Basically, yes, there is a difference. Our process concedes, as Secretary has testified, to a winnowing down of the issues so that cross-examination is really reserved for those issues that the Commission finds present a genuine dispute.

Senator Mitchell. What is wrong with permitting cross-examination as it is now?

Mr. Greenleigh. What has happened in practice regrettably is that parties come into the proceeding and use cross-examination to develop their case.

. Senator Mitchell. What is the matter with that?

Mr. Greenleigh. It has proved to be, from the Commission's experience, burdensome. It has turned out that in many cases the contentions that are finally explored on cross-examination by parties without resorting to direct testimony prove to be without merit. So we give either party who has an effected interest an opportunity to come in and state its views on the record, but if there is a genuine issue of fact that is in dispute, then we have cross-examination in an adjudicatory format for those issues.

Senator Mitchell. Mr. Greenleigh, over about 800 years of experience the Anglo-Saxon nations have not been able to devise a more effective mechanism for arriving at the truth than the use of cross-examination. If an individual's life is at stake, he cannot be denied the right of cross-examination, if an individual's liberty is at stake.

Now it seems to me that through trial and error, and the best efforts of humans, we have come up with a mechanism that everyone agrees, and I assume you do, is the best mechanism for arriving at the truth. You don't propose that we abolish cross-examination in a trial of a man for murder?

Mr. Greenleigh. No, sir.

Senator Mitchell. What is wrong with keeping it up here, what is wrong with saying it does help develop a case and what is wrong with the contention that indeed it does permit the presentation and exposition of points that may be genuine issues of dispute that would not otherwise arise in a proceeding?

Mr. Greenleigh. Nothing at all. That is precisely what our bill tries to do. If there is a question of the truth or falsity of something, that is generally, I would consider——

Senator Mitchell. But frequently——

Mr. **Greenleigh**. You can't dispute an issue of fact.

Senator **Mitchell**. But frequently you can't make the judgment that there is a genuine dispute as to truth or falsity unless you have cross-examination, unless you have the opportunity to test the veracity, the consistency, the reasonableness of a person's statement.

Mr. **Greenleigh**. There is a safety valve in the legislative type portion of the hearing process that permits discovery. Discovery would be at the discretion of the hearing officer. Discovery related to an issue, even if it is not contested, might merit cross-examination. So there is that one element within the legislative-type portion before you get to the adjudicatory portion that merits cross-examination.

Senator **Mitchell**. I just want to say that is an area in which I really strenuously disagree. You know yourself, Mr. Secretary, you know this in your position, everybody in this room knows this, there is nothing better to prepare you for the presentation of a point of view or an argument than the certain knowledge that someone who disagrees with you is going to be asking you vigorous tough questions about it.

It leads inevitably to accuracy, truthfulness, and all of the qualities that we like to associate with the testimony. You eliminate that from the process it seems to me. You eliminate an enormous safeguard. I recognize that it is subject to abuse and it has undoubtedly led to the delay in the process as you said. But my question is in the balance are you depriving not only the opponents but the proponents of a valuable mechanism because it doesn't help anybody to have their views subjected to vigorous contested challenge in an open forum.

Mr. **Greenleigh**. Senator, I know this subcommittee had a hand in crafting section 134 of the Nuclear Waste Policy Act. I don't think what we are suggesting in the administration bill varies significantly, certainly not in the elements that we are discussing now, in the printing of that bill that this subcommittee considered.

Secretary **Hodel**. Senator, I had a recent reminder in preparation for this hearing of the importance of knowing that the issues you espouse are going to be challenged. My understanding of the objective of this process as proposed here is not unlike the pretrial conference in Federal court proceedings. It seemed to me as I look through this, analyzed it, that there would be a substantial advantage to having the requirement that we go through a legislative type process. It may be that every piece you raised in that legislative process must be carried over into the adjudicatory process, and every issue should be debated and subject to cross examination.

But the real difference between our proposal and the NRC proposal is I believe NRC wants to experiment with this, and we think that it is, in effect, what is done today in a somewhat more difficult way. We cannot be sure that this will preclude or exclude cross examination on any issue that is now subject to that. The adjudicatory hearing may in fact be applied to everything it is now applied to. But we think the bill provides an avenue to avoid the present process which we think does provide opportunities for reiteration of points and in any court proceeding would have become subject to judicial recognition.

Senator MITCHELL. My time is up. I want to let Senator Simpson resume his questioning. Let me just say that here is the thing that bothers me. You are recommending two actions simultaneously. One is going to the one-step licensing process which inherently makes sense. At the same time you are limiting the hearing process. In other words, you are reducing the number of opportunities within which a hearing would be held. Then you are changing the nature of the hearing to further reduce the participation. Either one, by itself, has a limiting effect on public participation in my judgment, the combination of the two makes for a very significant reduction.

I will explore that in somewhat more detail afterwards.

Secretary HODEL. If I could comment on that, I think it is an important point. If that is your perception I can understand greatly your concern. We don't see things in that way obviously, because I think if we did we would have to say this was a faulty proposal. It seems to me that there is a qualitative difference between our proposal to have the designs essentially completed at the time of the hearing versus today's process where they are only partially completed. This may in and of itself answer the question why you don't have to have two hearings. To begin with, you have got essentially the whole record before you at that first You still have the option for the NRC to hold hearings if anything is changed during construction. That option is always there.

Second, with regard to participation, we don't see that we are restricting participation. We are attempting to focus attention on those issues which have significance through the process by which the participation takes place. It seems to me every hearing officer sooner or later has to say what the issues are and which we are really going to be joined. What we are saying is, "let's get a process which causes rejoinder on those positions." It seems to me that the proposed hearing process does not restrict or limit, and the public still has every bit of participation it now has. But more importantly, because of the qualitative difference in the one-step process, they have a significant chance to prevent the billions of dollars of investment which make it very hard to change direction suddenly.

Senator MITCHELL. I apologize.

Senator SIMPSON. No; that is very interesting because I think again you have that tremendous background on the bench and as an attorney and you know what unwarrwanted delay can do to a proceeding and what redundancy can do to the legal system.

As I interpret this this is a trial basis and if I am not mistaken it rings clearly with what we allowed and put in the legislation under the nuclear waste bill with regard to the expansion of spent fuel storage capacity. Is not this the same language?

Secretary HODEL. Yes.

Senator SIMPSON. It is exactly the same, is it not?

Secretary HODEL. Yes.

Senator SIMPSON. I believe we passed this out of this committte with an extraordinary vote of support to go forward on a trial basis if I recall correctly.

So this is the same measure. I think that is important. I concur that cross examination in the years of Anglo-Saxon experience and law and litigation and get at the truth is the essence of the game.

But there is another thing that creeps into that essence and that is the rules of evidence. Several hundred objections and deviations to the hearsay rule which sometimes takes truth and ties it into a Gordian knot. So I am also interested in how we did come that far with cross examination in developing the truth and then we come to ways to also rip that apart in Anglo-Saxon law.

I have seen that on the other side of the bench.

We want to preserve the adjudicatory nature of the proceedings. But what is possibly happening here, is it not, is that we have such a conservative approach by the NRC staff in order to avoid any successful challenge by intervenors, that they just kind of lose sight of things, the applicants typically avoid raising uncertain issues unless clearly compelled. Finally, the resources available to the NRC are often focused on the adjudicatory proceeding with an eye toward ensuring solely that the NRC staff judgment is ironclad and will prevail. I have looked at the web of layering of attorneys functioning in the NRC. They have invented their own rules of administrative procedure, lengthened them beyond what anyone would have ever deemed possible in the human mind.

So we have this tendency to produce absolute voluminous documentation on each and every issue, so much so that if I am not mistaken the typical licensing board is flooded with information, bales of it clogging the system and unable to focus on the public health and safety. Is that where we are in this process as you see it?

Mr. Greenleigh. Mr. Chairman, I fear that we are there now. That is why we suggest that a legitimate effort needs to be made to reform the process and still maintain the benefits of cross-examination, the adjudicatory portion of the system.

Senator Mitchell. In the Anglo-Saxon traditional system, that is what is known as a leading question.

Senator Simpson. It certainly wasn't a hypothetical one.

Secretary Hodel. May we expand on that?

Senator Simpson. If you would, for the record, perhaps, give me what you know of that.

Secretary Hodel. Perhaps it would be useful if we tried to provide an example of what we feel are exceedingly lengthy adjudicatory hearings that are really not contributory to a good decisionmaking process. That may be helpful.

Senator Simpson. It would be.

[The information referred to follows:]

Example of a Lengthy Proceeding

In the course of its application to the Atomic Safety and Licensing Board of the NRC for an operating license, the Shoreham Power Plant on Long Island, New York, was subject to a hearing on safety-related issues which lasted 30 weeks (four days per week) in the period May 1982 to April 1983 and compiled a record consisting of the following:

Pages of prefiled testimony	7,500
Witness appearances	120
Exhibits	194
Transcript pages	21,500
Pages of findings of fact and conclusions of law	2,200

These statistics do not include issues related to emergency preparedness. Those issues will require additional hearings and generate additional hearing records, which may be substantial.

Senator SIMPSON. Back to the design issue now. That is one that is intriguing me more, where we approved the design, issued a permit, based upon the presentation of 20 percent of the design plan. That happens now.

Is that not correct? That is what we do now?

Secretary HODEL. Yes.

Senator SIMPSON. So the rest of the 80 percent of the design could be called design as you go.

Is that not one of the serious reasons for quality assurance deficiencies in this whole process?

Secretary HODEL. We believe so, Mr. Chairman. Yes.

Senator SIMPSON. How could that not be the case?

Secretary HODEL. I don't know how it could not be the case.

Senator SIMPSON. I don't either. It vexes me that we cannot, perhaps, be striving for a 70-percent or 80-percent design standardization and rid ourselves of design as you go. No wonder it becomes intriguing to the intervenor or the citizen, and it should. But it also becomes a tremendous expense and it also makes people say, well, we are going to have to relitigate, so dig in and we will all be ready for the long haul. That cannot be good.

Secretary HODEL. Also I think it contributes to this problem of designing part way through the process and realizing you now have to go back and redesign the earlier element because of the way you have designed the subsequent element.

That creates further complications. That creates the problem I identified in my opening statement. The construction workers I know, in spite of the fact they get paid the same number of dollars to do the job, simply don't like to build something over, tear it out, build it again, and tear it out again. I fear that over the long haul that is not a constructive process.

We would be much better to build it the first time the way it ought to be built and get better performance out of the workers.

Senator SIMPSON. In the construction process, if it increases the public health and safety, but if the original permit was issued on the basis that that was there, then I think those are things that we ought to examine.

If an applicant were to submit less than 100-percent design, let's say 80 percent, if we ever got to that, what sort of a review would you feel should be undertaken with regard to the remaining 20 percent?

What opportunity would you envision that the public would have to request a hearing on those remaining issues?

Secretary HODEL. I would like to ask Mr. Brewer to expand on this, but, presumably, the 20 percent that would not be designed would be of a more peripheral nature. What we would not be talking about would be basic structural core and the heat process and transfer elements of the project.

Presumably, again, that would not raise the same kinds of questions with regard to safety. If I am wrong, if in fact a major element of the plant was part of that 20 percent not designed, then that is precisely the situation in which it may well be necessary for the Commission to have that subsequent hearing. I think we would still have the basic concern that exists today.

Once a plant is constructed, you have to review whether it was constructed in accordance with the part of the design that wasn't previously subject to review.

Senator **Simpson**. The DOE legislation you propose makes a hybrid hearing mandatory. The NRC bill would give the Commissioners the discretion to decide between a hybrid hearing or the more formal adjudicatory hearing.

Why, in your judgment, should the hybrid hearing be mandatory and does that give the Commission the flexibility that it needs to tailor hearing procedures in the individual cases?

Secretary **Hodel**. It should be mandatory because we think the Commission needs all the encouragement it can get to do this and to stay with it.

And, second, the flexibility for the Commission continues because even in setting up the hybrid process, the Commission would have the authority to insist that virtually all matters go forward to adjudication or any matters of interest would go forward to adjudication.

So they coninue to have the flexibility that this would require them to go through the legislative process first.

Senator **Simpson**. Senator Mitchell.

Senator **Mitchell**. Would you show me in the bill where it says just what you said, Mr. Secretary?

Mr. Greenleigh, perhaps you could. You said a hybrid hearing is mandatory and there is a discretionary authority as to the formal hearing.

I have your bill in front of me. I assume you are talking about on page 12 of that bill at the very bottom of the page, line 23.

Is that what you are talking about, the hearing officer shall give any person the opportunity to submit for the record written data, views, or arguments on the section.

Is that what you view as a hybrid hearing?

Mr. **Greenleigh**. That is the legislative portion of the hearing; that is correct.

Senator **Mitchell**. So anybody, any person who wants to submit written data, if a person's interest is effective, goes through that process which does not have any right of cross-examination and thereafter, as I understand it, going on to page 14, the hearing officer shall make a decision subject to the Commission's ultimate decision that the formal hearing is required only under certain circumstances set forth in the bill; is that correct?

Secretary **Hodel**. That is correct, except with one caveat. That is, you will notice on line 7, page 13, that the oral presentation shall be preceded by discovery procedures that the rules of the Commission may provide.

As I was indicating before, the Commission has discretion in those rules of procedures to provide the cross-examination as part of that discovery process. So even there in the legislative type first end of the hearing process, you would have cross-examination.

Senator **Mitchell**. It may have?

Secretary **Hodel**. May have.

Senator **Mitchell**. May have. Right.

Twice in your testimony, Mr. Secretary, you referred to the option of the Commission to hold another hearing subsequently.

Is that the option referred to in your comparison, that 2.206 proceeding?

Is that what you are talking about?

Secretary HODEL. No; I am referring to generic authority given to the Nuclear Regulatory Commission to hold a hearing under section 161 of the Atomic Energy Act.

Senator MITCHELL. The other question I would like to ask you is that Commissioner Gilinsky especially spoke very vigorously in support of one-step design and review and in opposition to one-step licensing. He made the point which you have made which I think is a very valid point.

You have argued it makes a lot more sense to have a hearing process further down the road so that anybody who either wants to support or oppose it has something more substantial about which to conduct the proceeding. And I think that is such commonsense that we all agree with that. I believe that makes a great deal of sense. The problem is as he set it out is that it doesn't make any sense to give them an operating license at the same time because that whole process now goes to the question of the completition of the project in accordance with the design, whether or not there is a valid emergency plan, whether the operators are properly trained, all of which seem to be important elements that would be precluded under your provision.

As I understand it, what you say is that the utility engages in a self-certification that is subject to challenge by the Commission.

Is that what you are proposing to replace the licensing hearing that now occurs?

Mr. GREENLEIGH. At the construction and operating license stage as we envision it, these emergency procedures and these other items that you talk about can be laid out with some generality. And the way we would envision it would be that the staff in the first instance and the Commission in the second instance would have the opportunity to review the utility's observance of the very obligations that it undertook to make at the COL stage. And if the Commission found that it, in fact, was not complying with the conditions of its combined COL, then the Commission would either limit or in fact deny operation.

Senator MITCHELL. But, of course, as the Secretary just very eloquently stated that when you have a $2 billion or $3 billion investment under the existing circumstance, there is extraordinary pressure to grant the license and you say you want to change that.

Aren't you saying, in effect, the same thing?

Secretary HODEL. I don't think there is a substantive difference in those two situations. If you end up with the plant constructed and a fault has been found in the construction process, I think you have a comparable situation under the existing procedure or our procedure.

Senator MITCHELL. No; there was one significant difference. You would do away with the hearing. What you would do would be to say that the utility would make a self-certification and would say we have checked this all over, we have complied with all of the requirements that would be subject to challenge by the Commission as I understand your provision.

Am I correct in that understanding?

Secretary HODEL. Yes; you have the same range you have now and the same compliance requirements. When you are finished, the difference is you do not need to go to a hearing unless the Commission decides it wants to hold a hearing.

The Commission always has the opportunity to hold a hearing. In the situation you are postulating, I cannot imagine it would not hold a hearing unless it didn't think one was necessary, and it would simply revoke the license for absence of having compliance with the construction and operating license. That is true, even in the operating plant today. The Commission still has the right to revoke or to limit the operation if it sees some problem.

I don't think that situation changes significantly. The important thing, I think, is we should have a much more complete review of the design early in the process.

The idea is that we shouldn't be going back through that design over and over. If it has been approved and there have been no significant changes then, when you complete the plant in accordance with that design, you ought to be able to go ahead and operate it.

If somebody comes along and says there are some facts here not taken into account, it wasn't built according to the design, clearly the Commission still has full control. In fact, even if the plant is operating and later somebody comes along, it is not beyond the reach of the Commission and it should not be. We don't for a minute advocate it. Not at all.

What we are trying to do is rationalize this process. We want that public involvement in the process. It has got to be satisfactory. It has got to be complete. We recognize that. The point is the one we made earlier—if we don't have credibility, there won't be another nuclear powerplant built. We have got to have the credibility, but we also ought to have it up front enough so that society doesn't have vast resources committed to attempt to build and operate plants which are not going to be acceptable.

Senator MITCHELL. On that point, no reasonable person can disagree. I certainly don't. I think that makes a great deal of sense.

As Senator Simpson indicated, he feels the same way. The question arises is that under the current procedures subsequent to that, the licensing process is different from the construction permit and it involves factors other than physical design and construction of the plant. I am trying to discover what it is you think you are accomplishing by eliminating a hearing at that stage and substituting for it a self-certification, subject to challenge by the Commission process.

Why will that work better to protect the public safety, which I remind you again, is our paramount concern?

Secretary HODEL. It clearly will protect the public safety better than the present process because you don't have upfront and——

Senator MITCHELL. No. Not that part. We agree on that part. Let's limit ourselves to the subsequent part.

Secretary HODEL. If there is a subsequent problem with health and safety, then, clearly the public safety will be protected the same way it is now. The Commission will either act or it will hold a hearing and then act.

Senator MITCHELL. If they will do the same as now, why change the present system?

Secretary HODEL. Because we believe that by changing this system, we shift a great deal of the work up front and we get precisely the point you made earlier. Plants can be built on a shorter period of time and a few have been but a vast proportion have not.

This process has invited continued design during construction.

Senator MITCHELL. You see, you go back to the question with which I do not disagree.

Let me try again to separate them. We all agree that holding a hearing later in the process in terms of preparation of design makes a great deal of sense.

Leaving that aside, that we agree on. That is the legislation.

Now, we come to the second point which is after conpletion where now there is a hearing on the question of whether or not an operating license should be granted. At that point you want to do away with that hearing and substitute for it a process by which the utility owns and has constructed the plant certifies to the Commission, it makes a review and says we have complied with all of these things, we should get an operating license, now the Commission reviews that and has the authority to challenge it.

Why is that better in protecting the public interest than the current hearing on whether or not there should be an operating license?

Secretary HODEL. It may not be better but it is not worse getting to the problem?

The process laid out in the bill is the optimum as I see it. That is the maximum that can be achieved because the utility does what it said it will do. It complies with all of the requirements in its combined construction operating license. The utility has not worked that in a vacuum when it reaches the point where it has completed the plant and says we have done all of these things.

There are inspections throughout the process. NRC will have received all kinds of information. So that what happens is if they have done all of that, everybody agrees they have done it perfectly——

Senator MITCHELL. Mr. Secretary, could I interrupt you there?

Senator Simpson has a time commitment which I do not have. I very reluctantly interrupt you. I would like to defer to him. You and I can get back to this after he leaves.

Senator SIMPSON. Thank you.

Just about three more questions from me that I don't think have been addressed for my purpose yet.

In the event there are issues that cannot be resolved in a single hearing held prior to the start of construction, issues such as emergency planning for one which we know what is occurring in that area now. When, then, under the D0E bill would these issues be addressed? What opportunity for public involvement would be available?

Secretary HODEL. I believe, Mr. Chairman, that we would anticipate that questions of that type would certainly be addressed in that initial hearing because they are rather significant questions.

But suppose an issue arises subsequent to the hearing that was not known about at the time of the hearing? The NRC always has the option to review the matter. I believe they can always hold a hearing.

They could suspend construction because of the changed circumstances. So that none of the flexibility of the NRC has been removed. This actually goes back to the question Senator Mitchell was asking. We have not removed the NRC's flexibility to impose whatever requirements it chooses to impose.

We have tried to identify an optimum. In the optimum case we wouldn't have the changed circumstances that would necessitate a subsequent hearing. If they existed, the Commission would have to hold them and act appropriately.

Senator SIMPSON. In order for this single stage approach to be successful, it appears to me that the utility will have to submit, obviously, much more comprehensive design information at the beginning of the process.

I would ask you, how much design information does a utility typically submit under today's approach, and how much would you envision would be required in order for an applicant to be granted this combined construction permit and operating license?

Secretary HODEL. The figures we are working with, Mr. Chairman, indicate 20 to 25 percent completion at the present practice, and we would anticipate something closer to 80 percent or more of design. If you had a standard design, presumably that would be all of the operating portions of the plant but the portions of the design that were site specific.

Senator SIMPSON. Do you have anything to add?

Mr. BREWER. Also, Mr. Chairman, the degree of detail is left to the discretion of to the NRC.

Senator SIMPSON. Final question: We have briefly noted but we really have not focused yet on the renegotiation of issues.

What evidence is there to suggest that this is a problem under the present system?

Mr. GREENLEIGH. Under the present system, as I understand it, Mr. Chairman, the relitigation of issues at the operating license stage can be those issues that were resolved at the construction stage. As far as those are concerned, they would be governed today by the traditional principles of res adjudicata and collateral estoppel.

What does that mean? That means that only the party that previously raised the issue would be barred from raising them again in the operating license stage. Any other party could raise the same issue. So you would have a substantial risk of relitigation.

Under the administration bill, a prima facie showing must be made that there is a substantial safety issue at stake before any issue resolved in any preceding proceeding can be relitigated.

Senator SIMPSON. I think that was interesting to me. We do have that issue that relitigation will not be done by the same parties, as I understand it, but that you have your surrogate inquisitors come forward with the same issue but you are a different party.

That is an extraordinary situation where you have the very same issue being able to be brought back into the fray, but it is allowed because it comes from a different party.

Senator MITCHELL. Mr. Chairman, could I just comnent on that? There is a doctrine of the law which is a corrollary of collateral estoppel to which Mr. Greenleigh referred which is estoppel of the case in which I believe courts have the authority to prevent such an occurrence by invoking that doctrine if the court is persuaded that the issue has been fully litigated by parties who are true adversaries and have a stake in the litigation.

Are you saying that this is a problem that has not been addressed by the Commission and it has not deemed itself to have the authority to prevent this from occurring?

Mr. GREENLEIGH. That is our understanding. I wasn't here yesterday, but I understand that the Commission itself feels that it does not have that kind of power.

Senator MITCHELL. Unfortunately I had to leave yesterday because I had a bill that I am sponsoring that came up in another committee. I wish I had been here then because I feel that where that occurs in the obvious manner described by the chairman, that it is fully within the authority or ought to be fully within the authority of the preciding official, the court or the commission to say what the fact is.

If it has already been litigated by people who are adversaries and who have an interest in the litigation and, therefore, they are not going to permit it to be litigated again, I don't think you need to change the law to have such a commonsense provision exist.

I will look into that, Mr. Chairman.

Senator SIMPSON. I am sure you will. You described various forms of estoppel there. I thought estoppel was a pain.

I always left that to the persons on the Bench. I just thought I would throw it in. I knew that extra definition.

Now, I must absent myself. But if I could just make one 10-second summary.

As I understand this bill, no one under this bill has been denied the opportunity to come forward at least once and get the issue resolved.

Is that not where we are?

Secretary HODEL. That is correct.

Senator SIMPSON. No one? Not one single intervenor, not one single party of interest would be denied the opportunity to come forward at least once?

Secretary HODEL. I believe that to be correct, yes.

Senator SIMPSON. So with that, I am going to leave you to a bright gentleman straining your accumulative limits and I am going to leave.

I hope that everything will be all right.

Senator MITCHELL. I promise to behave, Mr. Chairman, in your absence.

Senator SIMPSON. I know you will. That is why I am leaving, civilized imposition will be coming.

I want to thank you very much for your testimony and your presence. You present yourself very well. I think there are many misconceptions about you and your role and, hopefully, those are allayed and dismissed because you know the issues and those who know you and have watched you know that you do not carry some ideological bent into an awfully tough job. I admire that.

Secretary HODEL. Thank you, Mr. Chairman.

Senator SIMPSON. Thank you, very much. It is all yours, Senator Mitchell.

Senator MITCHELL [presiding]. Thank you, Mr. Chairman.

Just to clarify that point that the Chairman made that under your bill, no one is denied the opportunity to come forward at least once. You answered in the affirmative.

Secretary HODEL. He said no party or interest or no person having an interest in the process. That's right.

Senator MITCHELL. But it ought to be made clear that there is no requirement that that party receive a full adjudicatory hearing; that is, they have the opportunity to come forward under the so-called hybrid procedures which leaves it within the discretion of the Commission, whether or not that person will be afforded any opportunity to have the issue presented in the type of proceeding that permits cross examination and contesting the views of anyone in opposition.

That is true, is it not?

Secretary HODEL. That is correct.

Senator MITCHELL. Regarding this one step licensing process, let me read you a statement which Commissioner Gilinsky made yesterday in opposition to it and ask you to respond.

He said: "The Commission's proposal allows for a preoperational review but some of the industry groups want to eliminate it and I am concerned about how these provisions will be interpreted."

If I may insert outside the quote, I understand that your legislation in effect does what he refers to here, eliminate the preoperational review.

He goes on——

Secretary HODEL. I would have to disagree with him, if that is his interpretation, because what this does is it eliminates the mandatory hearing by the Commission. It leaves the Commission able to do so if it chooses to.

If the problem arose very often, we might see more than one use by the Commission of its discretionary authority to hold a hearing. I think up until now the public has had the opportunity for a hearing before the plant operation begins so that probably has tended to take the heat off the NRC to hold discretionary hearings.

Senator MITCHELL. I think that is a fair statement.

Let me go back and read the entire quote. I do want you to respond to the heart of it which is the next sentence. He said:

> The Commission's proposal allows for a pre-operational review but some of the industry groups want to eliminate it and I am concerned about. So long as the law tells the utility building plant that it has an operating license and at the same time tells the regulators it is still up to them to determine the readiness of the plant for operation, someone is being fooled.
>
> I am concerned that it may be those who expect a rigorous pre-operation check.

The heart of his concern is that under your procedure, the one-step licensing, the combined construction permit and operating license, you tell the utility that it has a license before it has built a plant. And at the same time, you tell the regulators that is the Commission that it is up to them to determine whether or not the plant is ready for operation.

Is Commissioner Gilinsky correct? Is someone being fooled?

Secretary HODEL. I don't think so.

Senator MITCHELL. How can you reconcile those two apparently conflicting grants of authority?

Secretary HODEL. I don't think anybody is being fooled. I do think that they are reconcilable.

As I was saying when Senator Simpson had to leave, what we propose is the maximum desirable level of activity. The company comes in; it obtains the license.

Senator MITCHELL. It is an license?

Secretary HODEL. It is operating both a construction and operating license. Basically, what that says to the company is, if you build the plant that you have designed, you will be allowed to operate it, subject, of course, always to the backfitting portions of the bill. But presuming there are no major changes in the way we look at the world, you will be allowed to operate this plant.

If additional issues arise or if inspections indicate that the plant hasn't been constructed in accordance with the design, then, clearly, the NRC has all kinds of authority and opportunity to come in and revoke the permit or to hold a hearing and then to revoke it or to delay the operation of the plant, which it has the right to do, even after the plant is in operation.

The risk that might occur is that a commission could, in its discretion, decide that it would always hold a hearing. It has got a right to do so. It could always hold a hearing if there was a slightest challenge or question raised to that plant. So in a sense, the operating license could become illusory. It seems like we have something here which is useful. If you build it in accordance with the construction plans, you will be allowed to operate it. But the Commission could say, on second thought, we are going to hold 3 years or 1 year of hearings, and we are going to go through a complete adjudicatory hearing over the suitability of the operating license. That risk exists, it seems to me.

I don't think it is a very serious one from the company point of view, because I believe that there will be no incentive for the Commission to do that. If the Congress has spoken and said we would prefer to see a certain amount of certainty provided in this process, I think the Commission will attempt to see to it that it is available. And the company's obligation, in turn, is going to be to live up to that license.

I think this is not uncomnon in our society where we provide a license to do something. You may install something in your facility, in your building, in your factory, in your home, and you may utilize it provided you do it properly.

You can still have it revoked if it turns out it is not a safe situation.

Senator MITCHELL. You see part of the problem is the reality of the circumstance that exists. Everyone here has said that one of the problems, including yours, that one of the problems of the process now is that, one, you get to this licensing hearing and billions of dollars have been spent, a physical structure is in existence, there is enormous pressure on the Commission to grant the license to operate.

How much greater will that pressure be when the license already has been issued years ago, the money has been spent, the plant is up and in order to prevent it from going they have to revoke a previously issued license.

If your first point is valid, does it not take on an even greater concern under the circumstances which your bill would create?

Secretary **Hodel**. I would see it as a matter of very small degree as compared to what we have today.

A lot of the plant is under review at the very end—it has been built without an operating license, without a pre-review, if you will, of the whole plant. I think part of the problem here with this concept is in the minds of people looking at this proposal. They see plants being built as plants have been built to date.

It is hard to place ourselves in a different world that would exist under this proposal where the plant design is essentially completed for that first review.

Now you come down to the end, and we say, these changes are going to be very difficult, and the point is well taken. It is very difficult today to prevent that plant from operating. It has been designed while being under construction. The difference is we would have the plant designed before construction commenced, and the basic issues should have been dealt with—and I believe, will have been dealt with—in the initial hearing.

Now, we come down to the end. The plant is completed, exactly as it is today. The difference is it has been completed in accordance with a combined construction and operating license which contemplated going into operation if it was built that way.

I don't think I can disagree with you that there will be substantial pressure to operate any completed plant. I think we will have better plants for which the pressure is going to be applied.

Senator **Mitchell**. Let me say that in your statement, you referred to the Kemeny report and the Rogovin report and you say, "These studies have emphasized the importance of changing the licensing process to focus on the issues of public health and safety and making public participation in the process more meaningful."

You cite that with approval and then state that your legislation is an attempt to meet those needs.

I think it is fair to say that one step licensing standardized design provisions can be described as an attempt to meet those needs but I am at a loss to see how effectively reducing the public's meaningful opportunity to participate, that is, by reducing the number of hearings from two to one, and from reducing the type of hearing from full adjudicatory to hybrid can be said to serve those purposes.

I think, frankly, that they go in directly the opposite direction. So what I am saying is that I can agree with the thrust of the legislation and understand the requirement if we get past way back to the threshhold question of why we are doing all of this, but I don't see how you can say that reducing the number of hearings and reducing especially the type of hearing serves to advance either the cause of public health or safety or of making public participation in the process more meaningful.

Secretary **Hodel**. Senator, if we look at the process that would occur under our proposal, before a standardized plant can be designed and approved in a generic sense, there will have to be, obviously, an extensive hearing process through which the Commission will go.

Second, we have the opportunity to certify sites in advance of anticipated construction and need. I think this may also be a more meaningful chance for the public to participate.

In fact, having at one time been in the electric utilities business for the Federal Government, I will be interested to watch a process where industries select sites in advance of known necessity.

It is difficult to site something before you know there is a need. I will be interested to see how that would work. Again, we are proposing one hearing in the abstract, a standard plant design, before the specific plant proposal comes forward.

To have two hearings, as is the case today, when one of them is on a very embryonic design, may create the illusion of two major hearings. It creates the opportunity for two confrontations. I am not sure it creates an opportunity for two real hearings.

Senator MITCHELL. Let me ask you this. Leave aside all of the considerations——

Secretary HODEL. You see where I am headed.

Senator MITCHELL. I understand exactly. But let me ask you this question. Exclude from your consideration all factors other than public health and safety and meaningful public participation. Would not those, and I understand that is not the exclusive purpose of the legislation, but I ask you for the purpose of this question, would not those best be served by having the full adjudicatory hearing at the stage which you propose initially and then having a full adjudicatory hearing in a preoperational review for licensing purposes? If you consider only those two factors, public health and safety, and full and meaningful public participation, would not that provide the maximum for those two elements?

Secretary HODEL. Senator, I may be like a juror who has been told to exclude from his thinking a piece of inadmissible evidence that he has already heard. So I may come with such a bias on this point that I can't expunge that.

Senator MITCHELL. The beginning of that answer indicates that the only conceivable response is yes, that would be the maximum.

Secretary HODEL. No.

Senator MITCHELL. Benefit for those two elements.

Secretary HODEL. In fact the reason I am saying it this way is I can't come to that conclusion but I am trying to say it may be because of a bias. I want to qualify what I am saying. I genuinely believe, Senator, that when you have two adjudicatory hearings and all of the participants know that you are going to have a second adjudicatory hearing—now we are talking about safety—we have the second adjudicatory hearing that is not unlike the next to last editor of my testimony before I come up here. He always has in his heart the knowledge that, well, if I don't catch something, the next guy will. Frankly, then when I get it, sometimes I notice that nobody did. So it seems to me that that does not gain us anything in safety.

There is no discernable benefit to safety that comes from that second area. What about the public participation?

Senator MITCHELL. You say there is no discernable benefit for safety?

Secretary HODEL. The second adjudicatory hearing is mandatory once requested. In fact, at any stage of the process, including after plants have been operating for ten years, the NRC always has that ability to come back in when there is a need or benefit to be achieved from a hearing.

Senator MITCHELL. How about having the mandatory explicitly clothing the Commission with the authority to preclude consideration of any issue which has been previously adjudicated by real parties in interest? Wouldn't that meet your objection and still accomplish the purpose of maximum public participation?

Secretary HODEL. I don't know that that adds anything because if I understand——

Senator MITCHELL. Does it detract from anything?

Secretary HODEL. What I think it would do is to say that if the Commission understands anything important was not previously adjudicated, it will hold a hearing, which it already has a right to do. The only difference would be to make it mandatory as distinguished from at the discretion of the Commission. Again, I cannot conceive of a Commission in this position in the foreseeable future of this country refusing to hold a hearing or deciding not to hold a hearing where it thought there was a question of safety involved. So I don't see that is a difficulty. I don't think it gains us much.

What about the public participation?

If the public——

Senator MITCHELL. If it is not different and doesn't gain or lose anything you are the one who is proposing a change and it seems to me, therefore, the burden is on you to demonstrate that there is some benefit to the change and some rational for it. If the exsiting process as I have described it and the change that you propose——

Secretary HODEL. Senator, I am saying that within the context of our proposal for one-step licensing. Once you have the upfront one-step licensing proposal, I don't see that you gain anything by having a mandatory provision. The Commission will obviously hold a hearing if there is a question of safety. The benefit of not having it mandatory, of course, is that there is a much greater incentive to be completely upfront, which we think is important.

You had a second question. You may have two things there. I am not sure that public safety and health and full public participation are identical by any means. I don't think it is demonstrable, that extended public hearings and public comment over time add significantly to the safety conclusions made by the NRC. I am not saying with no public participation that you would achieve that. We clearly don't go in that direction.

Senator MITCHELL. Would you deny an assertion were one to be made and I am absolutely certan it will be made in subsequent hearings, that full public participation through the adjudicatory process has contributed to public health and safety by raising questions that were not previously observed or noted by either the utility or the Commission staff?

Secretary HODEL. Not only would I not deny it, I would affirm that has undoubtedly been the case and that is why we see a need for the continued public participation. I don't see we have negated it. Public participation is a catch phrase. It ought to be defined. I think public participation which is of a general nature—of a policy nature—has its place. It has its place up front. That is when we ought to be hearing—and will continue to hear no doubt—from people who genuinely don't want the construction of nuclear power plants at all.

That has got to be a continued part of a free public process, and it will be. The question is having made the decision that the plant, if it is designed in a certain way, ought to be allowed to operate, does it make sense from a societal standpoint to go back and say let's readjudicate those same questions. I think not. It seems to me that is fully dealt with. The public process continues.

Let me point out that it isn't just NRC hearings where we hear comments about public views on nuclear power plants. They take place in other arenas, including courtrooms, certainly in the political process, in the political campaigns. So there is a continued opportunity for full public participation, in the broadest sense of the word, at the beginning of a process. It seems to me it is then appropriate that the balance of the process be focused on key technical issues. That is what is provided for in this process unless there is a change in circumstance.

Senator MITCHELL. I don't think it is provided in a way that produces the maximum benefit. Let me say this to you: You learn more from people who are opposed to you than you do from those that support you. That is the whole concept of cross examination. Of really the fundamental basis of our democratic society having to test your views in public. I think that someone who is opposed say to a nuclear plant in general will also probably provide more meaningful specific criticism having lost on the general point than one who supports you. I have a bill in to control what I perceive to be the problem of acid rain. Over the past year and a half I have met with dozens and dozens of utility executives, coal industry executives, and administration representatives all of whom opposed my bill and all of whom come in and said, well, I have got this first, second, and third changes that we would like to be made. I always say to them in the beginning, if I make those changes will you support my bill?

Oh, no, Senator, we are against the bill period but if we think we are going to have one this will improve it. I have found many of their arguments are valid, well taken, justified and I have attempted to make changes to accommodate them. I think what you are doing here is unfortunately by, and I think it is clearly the effect, whether or not you personally may intend it, is to shutdown that whole process, to make it more difficult. I understand that there is a benefit to it, that is, to reduce the length, to reduce the delays and we are really engaged in a difficult balancing act here, what overall is best for society.

I think once you say to people they don't have the right to cross examine, they don't have the right to engage in the kind of challenging views of those that they oppose, you are really losing a large part of effective public participation and as a consequence advancement of public health and safety. I know we look at the same facts and reach different conclusions.

Secretary HODEL. We do.

Senator MITCHELL. But I think there is a very powerful case for that.

Secretary HODEL. Senator, obviously I don't believe that we are restricting unduly, the right of cross examination. I don't believe that we are prohibiting or restricting the right of the hearing. If there are any substantive reasons to do so, the Commission will continue to do that. My emphasis is obviously on the fact that this decision gets made up front. In a sense it is like an airplane, once it has taken off we hopefully don't have passengers on board that decide it should go to Havana. Yet there may be reasons on occasions when hearings ought to be held but it seems to me that we try, in this process, to see to it that we deal with those hard questions, once and for all up front, and only changed circumstances would require a subsequent hearing.

If changed circumstances occur, then that same public opportunity arises all over again but not to relitigate it.

Senator MITCHELL. I am not for relitigating it. In our discussion we are getting two notions intertwined, one is of the number of hearings and the second is of the type of hearing. I agree with you on having a hearing at a more meaningful stage. I agree with you on not having relitigation of identical issues by surrogate intervenors or whatever the phrase is that was used to describe them. I have no problem with that. I am not for delay. I am not for merely trying to indirectly wreck the process through delay. But I do think, you see, if you agree that intervenor public participation has enhanced public safety by developing problems that may have been overlooked by the staff and the utilities, and if you deny that opportunity in the most meaningful way of the adjudicatory hearing, I think inevitably the result is a diminution of contributing to the public health and safety. I guess that is the principal disagreement.

Secretary HODEL. My response is I don't see that we deny that. If an issue that would raise that kind of a question arises at any time including during operation of the plant, the NRC still has the obligation, and all of the powers and authorities necessary, to hold whatever kind of hearing it wants. What we are saying is if it is not that kind of an issue and it doesn't rise to that level, then we don't go back and review it again and again. Even if it wasn't raised, if it is a nonsubstantive issue it doesn't get raised automatically, but the Commission always has the right to do it as I say.

Senator MITCHELL. But you know as well as I do, and you have already indicated such, that the existence of such an issue revealed prior to the construction of the plant in the course of the previously scheduled hearing is one thing. But the hearing of such an issue years later when the plant is up, close to operation, is another thing. Everything in life is relative and the likelihood of a full blown hearing and a reversal of a revocation of an existing license is substantially diminished under the latter circumstance than it is in the former.

I think that is clearly what this is all about.

Secretary HODEL. What it will do is require a higher order of certainty, and it is a problem of some substance. But even today we had examples of the NRC doing precisely that with operating plants. So I think we have a living example, if you will, that even after that plant has been licensed and is operating, NRC is prepared to act if the issue appears to be of sufficient magnitude. I will agree with you, I think we are in total agreement, that the magnitude of an issue required to raise some doubt early in the process is totally different from the magnitude of an issue raised later.

I don't think that is inappropriate. I think in the judgment of these people who are charged with that responsibility in the NRC we have to look to somebody ultimately to make a judgment. We cannot legislate each issue. I know, I am sure, you would concur, so then it is a question of how far do we go with the NRC allowing them to make that judgment. I think we have gone quite far and I think that is appropriate.

Senator MITCHELL. Mr. Secretary, I thank you very much. I may have some other questions that I will submit in writing.

The hour is getting late. I know you have other things. You are a very effective advocate for your position and you I think responded to all of the questions with candor and completeness. I commend you for that.

I thank also your associates who were with you here today.

Secretary HODEL. Thank you. Senator, I appreciate it very much. I have been very impressed with the line of questioning which you have presented today and I do think that it sharpens one's ability to respond to questions.

Senator MITCHELL. It is a good argument for cross-examination, Mr. Secretary. Thank you all very much.

The hearing is adjourned.

[Whereupon, at 12:25 p.m., the hearing was adjourned, to reconvene at the call of the Chair.]

[Secretary Hodel's prepared statement and a letter to Senator Mitchell follow:]

STATEMENT OF DONALD PAUL HODEL
SECRETARY OF ENERGY
U.S. DEPARTMENT OF ENERGY
BEFORE THE SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

MAY 26, 1983

Mr. Chairman, it is a pleasure to be here to discuss S.894, the Administration's proposed Nuclear Licensing and Regulatory Reform Act of 1983. In my testimony this morning, I will discuss the need for licensing and regulatory reform and then describe the main objectives and specific elements of our legislative proposal.

The Need for Nuclear Licensing and Regulatory Reform

We seek a nuclear regulatory process that will sustain and enhance public health and safety; that is predictable, timely, and efficient; that does not discourage investment by utilities in nuclear power by being open-ended; and that does not unjustly burden the electricity consumer by extending construction schedules and costs. We do not now have a process that fulfills these criteria.

The current regulatory process does not appear to fulfill the needs of the participants -- that is, the public, the regulators, the consumers, and the industry. The needs of the public are to sustain and enhance public health and safety; to maximize the effectiveness of public participation in the hearing process; and to eliminate unnecessary increases in the cost of electricity. The needs of the regulators are generally the same as those of the public, with principal emphasis on efficiency in the application of resources to assure public health and safety. The needs of the consumer are to have available adequate electricity at reasonable rates. The needs of the industry (including utility companies, their investors, and their suppliers) are cost control and a predictable, stable licensing process.

The framework for the existing nuclear licensing and regulatory process was established by the Atomic Energy Act of 1954, to satisfy the requirements of a time when there were very few nuclear plants, and when the technology was in an early stage of development. Although the regulatory process has been modified from time to time, its basic structure is now more than 25 years old and ill-suited for the regulation of a major energy source in a changing regulatory environment.

There are currently 83 nuclear plants licensed to operate, and we expect this number to rise to approximately 130 plants within the next 10 years. We believe that it is time for the licensing process to be reexamined from the point of view of

25 years of experience, and to be upgraded to meet the current needs of all parties to the regulatory process.

I must point out that the initiatives that the Administration is proposing are not an attempt to resolve the debate over the need for nuclear power or its desirability when compared with other energy sources. Nuclear licensing reform is a necessary but not sufficient condition by itself for a revival in the level of nuclear commerce (new orders for nuclear powerplants). Major improvements in the financial condition of the utilities and increased growth in the demand for electricity are other prerequisites. But revival is not, in fact, our motivation in pressing for this legislation.

One could ask, then: "If there are no new orders expected in the near term, why do we need reform now?" I believe that our first order of business, and a major activity of the Federal government, should be to ensure the proper functioning of the institutional structure that serves our current nuclear investment -- the 83 plants now operating and the 62 others that are under construction or planned. Licensing and regulatory reform, such as the Administration proposes, is urgently needed for these plants. Further, we should use the time afforded by the current lull in new orders to update the process. With a more coherent and predictable licensing process in place, decisions on the role of nuclear power in the Nation's future can be decided rationally by a competitive market, our elected representatives, and the American public.

The need for nuclear licensing reform is recognized by a broad spectrum of organizations. Several major studies, including the "Kemeny Report" by the Presidential Commission that reviewed the Three Mile Island accident and the "Rogovin Report" by the NRC Special Inquiry Group on Three Mile Island, have examined the role of nuclear power in the United States, and the need for assuring its safety. These studies have emphasized the importance of changing the licensing process to focus on issues of public health and safety and of making public participation in the process more meaningful. The legislation submitted by the Administration is an attempt to meet those needs. As you know, the NRC has also submitted nuclear licensing and regulatory reform legislation.

Licensing Reform Objectives

Reflecting the needs of the public, the regulators, and the industry, the three major objectives of the Administration's licensing bill are as follows:

- To provide for continued improvement in the safety of nuclear powerplants;

- To improve the effectiveness of public participation; and
- To provide a modern, stable, and predictable licensing process.

Safety

The importance of revising the licensing process to improve the safety of nuclear power was underscored by the Kemeny Commission Report on Three Mile Island, which listed as a principal finding:

> "To prevent nuclear accidents as serious as Three Mile Island, fundamental changes will be necessary in the organization, procedures, and practices -- and above all -- in the attitudes of the Nuclear Regulatory Commission . . . ."

The evolution of nuclear technology and the accumulation of experience with operating facilities have made possible the steady improvement of safety standards for the design, construction, and operation of nuclear powerplants. The process for ordering the incorporation of new features in existing plants, whether in operation or under construction, is called "backfitting." The current backfitting procedure has significantly lacked a disciplined focus on the achievement of demonstrable improvements in safety. Further, the current process does not require consideration of the impact of an isolated modification in one system on the performance of other systems or on the plant's overall safety performance.

A 1980 NRC report, "Survey of Licensee Viewpoints on Regulatory Activities," contained the following statement:

> "It is the finding, notwithstanding the competence and good intentions of the staff, that the pace and nature of regulatory actions have created a potential safety problem of unknown dimensions."

The DOE legislative proposal contains a revision to the backfitting procedures that would help to correct these problems, and thereby enhance safety, by establishing a more orderly, focused process for determining needed modifications to nuclear plants.

As a further step toward improving the safety of nuclear powerplants (as well as reducing energy costs to the consumer), the proposed legislation authorizes the NRC to approve designs for entire plants, or for major portions of plants, in proceedings that are separate from a utility license application. This process should result in a few standard designs, as contrasted with the many customized, one-of-a-kind designs that have been presented under the current review process. Safety will be enhanced by allowing designers, constructors, operators, and regulators to concentrate on a smaller number of standard designs, rather than a plethora of custom designs.

The Administration's legislation would also enable firm decisions to be made about major design considerations at the beginning of the process, rather than postponing them until the actual construction is under way, or even until the plant is largely completed. The current system permits the design and regulation of nuclear plants in a piecemeal fashion during their construction. This sometimes leads to changes even after a plant is mostly completed, with the result that much reworking is required due to the effect that such changes may have on other plant systems. The waste of time, as well as the psychological impact on the labor force that results from being led to believe that the work being done today may be torn out and redone tomorrow, does not create a climate conducive to the quality construction that nuclear plants require. Thus, the ability to make early, firm decisions should not only improve the economics of nuclear power but also enhance plant safety performance as well.

Effectiveness of Public Participation

The second objective of the proposed legislation is to improve the effectiveness of public participation in the licensing process. The public may now take part in construction permit proceedings and -- if an intervenor group requests -- operating license hearings. But, as the Kemeny Commission pointed out, under the current hearing procedure, many substantive issues cannot be fully considered until the operating license stage, at which point changes are not easily made. After a plant is essentially complete, with many hundreds of millions -- or billions -- of dollars already spent, the view of the public cannot, as a practical matter, be considered as effectively as it could be at the beginning of the licensing process. Therefore, we are proposing a system with multiple opportunities for public participation early in the process, before firm decisions are made by the Commission and the applicant.

These opportunities would occur when the standardized plants are considered for approval, when the specific site is considered for approval, and when a combined construction permit and operating license is being considered. Early participation will make public influence and expertise more effective in matters related to public health and safety. It will also make for the most cost-effective use of resources by intervenors, regulators, and industry.

A Predictable Licensing Process

The third objective of the licensing reform legislation is to provide a stable licensing process consistent with the current needs of the public, the regulators, and the industry. Most of the provisions in the proposed legislation serve not only the objectives of enhanced safety and public participation but also improved economics (lower electricity costs to the consumer) and investment protection. An unpredictable, ad hoc licensing process increases plant scope and lead times and drives up costs to the consumer, as we have seen in the past decade, and also discourages investments in nuclear facilities.

With the modifications we are proposing, utilities will have standardized designs and sites approved in advance of the time when they need to commit a substantial amount of money. This will make their basis for planning new capacity more precise, and will also reduce the economic penalties to their consumers. Regulators are better served by a predictable process, in that they can allocate their resources in a more coherent and efficient manner, and thus more effectively fulfill their mission of assuring public health and safety.

Specifics of the DOE Legislative Proposal

There are five major elements in our proposed legislation:

- A more effective process and criteria for implementing design modification;

- A hybrid (adjudicatory and legislative) hearing process that would improve the quality of public participation in the licensing procedure;
- Preapproved designs;
- Early site approval; and
- One-step licensing.

While each of these provisions offers significant benefits independent of the others, it is the synergism of their effects that will provide a more rational and integrated approach to nuclear licensing.

With regard to your question concerning the possibility of implementing these proposals by administrative action as opposed to legislation, we have prepared for the record a table which compares the main provisions of the NRC and Administration bills and indicates those areas requiring legislation. As shown, the NRC can effect some of the proposed improvements under existing authority; indeed, it has initiated efforts to do so in the area of design modification. We believe, however, that a statutory basis would add a dimension of predictability and stability to these proposals that is necessary for effective implementation.

Design Modifications

The current process for incorporating design modifications (backfits) into a nuclear plant before, during, and after it is constructed suffers from fundamental deficiencies. The NRC has identified 87 different procedures by which modifications can be effected. Yet, in making such changes, no systematic and ordered review process has been used. Technical problems and their solutions are examined narrowly, often without adequate consideration for how an isolated specific modification may affect other systems in the plant or its overall safety performance.

The proposed legislation would correct these problems by requiring the NRC to conduct a centralized review of all staff backfitting proposals. This review would result in a more disciplined process for approving backfits, which would ideally be based on a quantitative assessment of the seriousness of the underlying safety concern, the value of the safety improvements that would result, and the cost of making the modification. In reaching a decision, the Commission must be assured that the backfit will substantially improve the protection of public health and safety over the remaining operating life of the plant.

Again, some of these proposed changes are already being implemented administratively by the NRC. To assure long-term policy stability and predictability, however, specific backfit provisions should have a statutory basis.

Hybrid Hearing Process

Our proposal offers improvements in the hearing process by means of three specific provisions. The first provision would require a formal hearing only when members of the public believe that a hearing is necessary; no hearing would be held if no one desired a hearing. Next, the adjudicatory format would be reserved for genuine and substantial disputes of fact; other matters would be handled in legislative-style hearings. Finally, issues once settled could not be heard again unless new material facts were introduced, based on a *prima facie* showing.

Preapproval of Design

The proposed legislation would also authorize the NRC to approve standard designs for entire plants or major subsystems, so that utilities would have the option of choosing a plant of preapproved design in lieu of a one-of-a-kind or customized plant design. The NRC would define the level of detail necessary to obtain such approval. If approved, the design would remain valid for 10 years, after which it would be eligible for renewal. This provision could decrease substantially the time and resources required for the design, review, certification, and construction of plants to meet the NRC's safety criteria, leading ultimately to lower costs for consumers. We also expect that standardized designs will provide safety benefits in a variety of ways:

- By allowing the regulators to focus on fewer plant-specific problems;
- By providing greater depth of experience in a smaller number of basic designs; and, finally,
- By providing a broader base of generic experience to the builders and operators of nuclear powerplants.

Early Site Approval

The proposed legislation would authorize the NRC to approve sites for prospective nuclear plants in advance of a utility's decision to apply for a construction permit. Under the current system, a utility must already have made the commitment to build a facility before engaging in the site review. The objective of the new provision is to permit earlier and more effective public participation in the site selection process, before significant resources are expended, thereby sparing both consumers and utilities unnecessary expense and costly planning uncertainties.

Combined Operating License

The proposed legislation would permit utilities to apply to the NRC for a construction and operating license in one proceeding, as opposed to the current process whereby the construction permit and operating license are obtained at different stages. The objective of this provision is to assure a more integrated, complete, and systematic review by the NRC early in the process; greater predictability and certainty for public planners; and earlier and more meaningful participation by the public.

In your letter of invitation, you asked specifically what our proposed legislation would do with respect to quality assurance problems. Over the long term, we believe that the use of standardized plant designs and one-step licensing will improve the quality of construction and operation of nuclear plants, because construction, inspection, testing, operation, and maintenance experience would be more readily transferable from one plant to another. We did not, however, direct a specific legislative proposal to the improvement of quality assurance in the near term. In its FY 1982-83 authorization for the NRC, Congress asked the Commission to study this specific issue, to run pilot programs as appropriate, and to report back to Congress in January 1984. We believe that a review to determine the need for legislative action would be appropriate following that report.

Conclusion

Mr. Chairman, the United States can only gain from an improved and more rational nuclear regulatory process. If the Nation should choose not to pursue its nuclear option beyond those plants now in operation and under construction, an improved process would still benefit the nuclear system already in place. We recognize that the improvements proposed here would not, in themselves, provide sufficient incentive or justification for a utility to order a new nuclear generating station. On the other hand, as the economy continues to recover and the demand for electricity increases -- as is generally expected -- the Nation risks severe energy penalties by leaving in place a regulatory process which, as a practical matter, is currently impairing an important option that it has taken decades and hundreds of billions of dollars to develop.

In our view, a rational nuclear licensing and regulatory process will play an important role in assuring that the future energy needs of this Nation can be met, and that the contribution of nuclear power will be made safely and with full and meaningful public participation. I believe that the legislation before you will achieve the objectives I have outlined, and I look forward to working with you toward its early enactment.

Thank you, Mr. Chairman.

COMPARISON OF PROPOSED NUCLEAR LICENSING REFORMS

Current Practice	Current NRC Authority	NRC Bill	Administration Bill
1. BACKFITTING			
Backfits for individual plants are authorized to be issued by several different levels of NRC management, and as a result there is a great tendency for haphazard backfitting with little attention to "priorities" in degree of safety importance. Additionally, the standard for backfitting as set forth in 10 CFR §50.109 has rarely been followed. Consequently, the current backfitting process is not controlled by a uniform standard.	NRC has adequate administrative authority to create a centralized review process for managing proposed backfits at individual plants. NRC also has current authority to promulgate a new backfit standard or to enforce the current standard strictly.	The NRC bill does not authorize or require the NRC to set up any particular type of review process for its backfitting program. It also does not address the issue of a new backfit standard.	The Administration bill requires the NRC to adopt regulations establishing procedures for a centralized review process for all Commission staff proposals for backfitting requirements. It also establishes a new backfit standard that must be met before the NRC can issue a new backfit. No timetables are established in the bill for when the new review process and standard are to take effect.
2. ONE-STEP LICENSING			
Current practice involves the granting of a construction permit with approximately 20-25 percent of design work completed. The operating license is issued years later as the plant nears completion. This second proceeding includes an opportunity for a hearing and injects into the process great uncertainty as to when the plant will actually be authorized to operate.	Two licenses are required by the Atomic Energy Act (AEA). Although the NRC has current authority to require more information at the construction permit stage -- up to 100% of design work -- current practice has not encouraged this, and the extra cost associated with more design work is a disincentive. An operating license could be issued at any time but is, in fact, issued only as the plant nears completion.	Authorizes the issuance of a combined construction permit and operating license in an effort to establish a one-step licensing process. However, the bill requires that prior to commencement of operation the NRC make an additional "finding" that the plant has been properly constructed, and the bill allows an opportunity at that point for a hearing on specific issues. The "finding" and hearing provisions effectively negate the one-step proceeding.	Authorizes the issuance of a construction and operating license (COL) which would allow construction and operation of a plant without any additional NRC "findings." No opportunity for a hearing is provided once the COL has been granted. A utility certification is required prior to operation, and unless the NRC disputes the certification, the plant could begin operation. Under the current NRC rules, a "2.206 proceeding" is available to anyone seeking to challenge the validity of the utility certification.
3. HEARINGS			
Current practice involves the use of time-consuming and procedurally complex adjudicatory hearings, including the use of cross-examination to resolve all outstanding issues. This system inhibits an efficient concentration of attention on whatever substantive safety issues might exist in a licensing proceeding. Moreover, the types of highly complex matters that typically arise in licensing proceedings are not always well suited to adjudicatory proceedings. Indeed, since the National Environmental Policy Act (NEPA) was determined to be applicable to NRC decisionmaking, all hearings on environmental issues have also been held under full trial-type proceedings, though NEPA clearly does not require such procedures.	The NRC has always employed full adjudicatory proceedings in carrying out the hearing requirements of the AEA. Legally, it would appear that the NRC need only conduct its hearings in compliance with the Administrative Procedure Act, which does not require adjudicatory proceedings. However, after almost 30 years of precedent, it would be difficult, if not impossible, for the NRC to change procedures on its own initiative.	Continues the current hearing process, but provides for optional experimentation with a hybrid hearing, involving both a legislative and an adjudicatory hearing.	Requires all hearings to be held under hybrid hearing procedures. Parties first present written statements, then oral presentation is permitted, and finally, adjudicatory procedures are allowed for issues consisting of a genuine and substantial dispute of fact which can be resolved only by introduction of evidence at a formal hearing.

COMPARISON OF PROPOSED NUCLEAR LICENSING REFORMS

Current Practice	Current NRC Authority	NRC Bill	Administration Bill
4. EARLY SITE PERMIT			
From the date of a utility's decision to build a nuclear powerplant, it typically takes more than five years before constuction actually begins. This period is spent locating and qualifying a site, including the performance of all work required by the NEPA, and in the conduct of hearings on the safety, environmental, and anti-trust issues. By the time the plant becomes operational, 12-14 years will have elapsed since the utility's decision to construct it. The problem is that energy forecasting so far into the future is difficult at best, and such a long process adds to the cost of the plant.	NRC has promulgated regulations providing the opportunity for review of site suitability issues and the issuance of a Staff Site Report in advance of a utility's decision to apply for a construction permit, and therefore off the "critical path" of facility planning. The Staff Site Report is not binding on the NRC. Presumably, the NRC could rewrite its regulations to make the Staff Site Report binding.	Provides legislative authority for the issuance of an early site permit that would be binding on the NRC and would allow a utility or any other party to qualify a site as suitable for a nuclear power plant without demonstrating a present need for the plant.	Provides legislative authority for the issuance of an early site permit that would accomplish the same goals as provided in the NRC bill.
5. PRE-APPROVAL OF DESIGN			
Applicants for construction permits typically submit design information covering only 20-25% of the final plant. Design work continues during the construction period, and this lack of certainty creates the need for many construction modifications and a less efficient construction schedule. Construction of more than one plant with the same design could increase the efficiency and enhance the safety of the overall plant because of better knowledge on how to build it.	The NRC has regulations which allow a vendor to seek staff approval of a preliminary or a final design separate from the submittal of a construction permit application. However, this staff approval would not be binding on the NRC. The NRC can also, however, approve a design through rulemaking, in which case it would be binding, subject only to a specific attack under 10 CFR §2.758 that the rule was not applicable to the proceeding in question.	Supports the concept of standard design and specifically authorizes the NRC to issue binding design approvals separate and apart from a construction permit application. The NRC bill applies only to thermal power generation facilities.	Authorizes the NRC to issue binding design approvals separate and apart from a construction permit application. The provision is similar to the NRC bill, except that it applies to all production and utilization facilities, its fee structure is different, and design approvals would be renewable more than once.

THE SECRETARY OF ENERGY
WASHINGTON, D.C. 20585

October 5, 1983

Honorable George J. Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell:

Your letter of July 20, 1983, requested us to supply the details of any specific instances of unnecessary backfit requirements in order to assist you in fully understanding the nature of the problems addressed by S. 894, the "Nuclear Licensing and Regulatory Reform Act of 1983." The Administration does not argue for legislative reform because backfits made to date were unnecessary, but instead that the current process is neither rational nor economically justified. By its own admission, for more than 10 years the Nuclear Regulatory Commission (NRC) has failed to collect information and assemble a record to document the rationale for its backfit decisions. This occurred despite the fact that 10 CFR 50.109 requires a "finding" that the backfit "will provide substantial additional protection which is required for the public health and safety or the common defense and security." These decisions, materially affecting health and safety, are of great concern to licensees, intervenors, and regulators. This failure to document the record for the past 10 years means that we cannot provide you with the requested information because it is unavailable. Considering the large resources expended (estimated to be as high as $30 billion) and the operational impacts resulting from backfitting (see enclosure), a disciplined and documented approach to the imposition of backfits, as called for in S. 894, is warranted.

The current backfitting process has several significant deficiencies that will be corrected by the Administration's bill. These include the numerous and undisciplined administrative mechanisms for imposing backfits, the absence of an analysis of the impact of a backfit on overall plant safety, the absence of means for reconciling potentially incompatible requirements, the absence of a procedure to establish priorities among backfits, and the lack of cost versus benefits analysis.

With respect to the mechanism for imposing backfits, NRC surveyed its own operations and identified 86 different ways that backfit requirements have been imposed, ranging from methods as formal as rulemaking to such informalities as telephone calls, speeches, and press releases. This lack of procedural coherence seems to be the main cause of NRC's inability to ascertain which backfits were applied to particular plants, and which requirements were being imposed at any one time. In addition, because backfits could be imposed in so many different ways, the impact of specific backfits on overall plant safety was not assessed. The centralized review procedure in the Administration's backfit proposal would add uniformity to the process and assure this overall safety impact assessment is conducted.

Another deficiency in the current process relates to incompatibility of different regulatory requirements. For example, to assure physical security, access must be restricted, while fire protection requirements call for rapid, relatively unrestricted access. Further, without a centralized review, technical reviews by one NRC branch will not necessarily take into account the constraints imposed by other branches, possibly resulting in conflicting requirements. The Administration's proposal would require a centralized review process that could coordinate these potentially conflicting requirements. It would enable NRC to balance one set of requirements against other relevant requirements, thereby facilitating the difficult job of deciding upon an optimal approach. Also, the criteria in our proposal for assessing the overall safety impact would assist NRC to ensure that potentially conflicting items are adequately considered.

The previous failure to set backfit priorities has created another problem. Without a method for establishing priorities, most requirements take on a "top priority" status. This lack of sequencing does not facilitate the orderly completion of needed backfits. In addition, utilities are often faced with shortfalls in critical components because vendor capacities and stocks cannot meet the demands. A centralized review process and a documented analysis would allow the necessary prioritization to occur.

Section 894's proposal of a centralized review process with established backfitting criteria, we believe, will provide a suitable framework for NRC to establish a more rational and coherent decisionmaking process.

You also requested examples of instances where hearings have delayed operation of nuclear plants. The hybrid hearing process proposed in the Administration's bill was not designed to shorten the hearing process, although there is some data that suggests some time savings may occur. The intent of the hybrid hearing proposal is to improve NRC's decisionmaking and to improve the public's ability to influence NRC's decisionmaking by providing a procedure in which resources are better focused to identify and resolve substantive issues important to the protection of the public health and safety.

Recently, former NRC Commissioner John Ahearne criticized the current regulatory process as being:

> "...far too wrapped up in legal arguments, and much less concentrating on substantive issues."

Further, he specifically criticized the hearing process as being like:

> "...a Kabuki dance, with a tremendous amount of motion and gestures and large amount of activity, but very little happens. And it is so frustrating for a technical person trying to get technical issues addressed in the midst of this tremendous legal framework."

We believe that trial-type, adjudicatory proceedings are not always the best way to resolve highly complicated technical issues presented in nuclear licensing proceedings, or the policy choices that may be tied to these issues. We believe these issues, involving complex technical documentation and professional opinions of a variety of experts, can usually be resolved through less formal proceedings. Trial-type, adjudicatory proceedings with full rights to cross-examine would be reserved to resolve issues that consist of genuine and substantial disputes of fact, and that are essential to the outcome of the proceedings and to the decisionmaking of NRC. The hybrid-type procedure proposed by S. 894 is designed to accomplish this.

The Administration's hybrid procedure proposal is similar to the hybrid procedure Congress included for limited use in the Nuclear Waste Policy Act of 1982 and is patterned after the procedure recommended in the Senate Committee on Governmental Affairs report, "Study on Federal Regulation, Volume 4, Delay in the Regulatory Process" (July 1977). One of the principal recommendations of this study was that agencies should be authorized and encouraged by statute to make greater use of informal rulemaking procedures; namely, the hybrid hearing procedure. Also, the study specifically cited nuclear licensing as one of the decisionmaking areas where strictly trial-type hearings are not the best way to resolve the highly scientific issues and the policy choices associated with this decisionmaking process.

I would like to emphasize that the hybrid hearing procedure is not the vast departure from the current NRC hearing process that some critics have claimed. The NRC has previously allowed informal discovery and prehearing conferences to winnow out contentions and formulate issues for adjudication. The hybrid procedures being proposed would include adjudicatory proceedings with full rights to cross-examination to resolve those issues that are genuine and substantial disputes of fact and essential to the outcome of the proceeding.

In summary, we believe that hybrid procedures make sense for resolving the highly technical issues surfaced in nuclear licensing proceedings. The public, NRC, and the license applicant will benefit from a procedure under which their resources can be focused more readily to identify and better resolve issues essential to the protection of the public health and safety.

Sincerely,

Donald Paul Hodel

DONALD PAUL HODEL

Enclosure:
Powerplant Backfitting and Regulatory
Impact Costs--Reports from 20 Utilities

bcc:
Alan K. Simpson
United States Senate
Washington, D.C. 20510

NUCLEAR LICENSING AND REGULATORY REFORM

TUESDAY, JUNE 14, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, D.C.

The subcommittee met, at 10:05 a.m., in room SR-418, Hon. Alan K. Simpson (chairman of the subcommittee) presiding.

Present: Senators Simpson and Mitchell.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Good morning, it is nice to have all of you here while we continue our consideration of nuclear licensing and regulatory reform. We began our series of hearings on licensing reform last month with testimony received from the NRC and the Department of Energy, and this morning we shall hear from witnesses testifying on behalf of the Edison Electric Institute; the American Nuclear Energy Council; the Atomic Industrial Forum; the American Public Power Association; two vendors, Westinghouse and General Electric; and two architect-engineers, Bechtel and Stone & Webster.

Both the NRC and the DOE have submitted legislative proposals recommending changes in the current process, which are supposed to achieve a more stable, efficient, and effective approach to the licensing of nuclear powerplants. The current licensing system was established 29 years ago at a time when the nuclear industry was different than we have today. Unfortunately, the licensing system has not kept pace with the changes in the industry and, as a consequence, we have witnessed a continual erosion by the NRC and the industry to protect public health and safety.

I shall not elaborate on the ever growing number of individuals and organizations that support the need for fundamental reform of the licensing process other than to say, assuredly, that since the Three Mile Island incident in 1979, this consensus has grown. We in the Congress, if we are to be quite serious about the business of protecting the public health and safety, have an obligation to turn our prompt attention to this most pressing problem.

The witnesses today are familiar with the working of the licensing process and bring a wealth of experience that I think will be most useful to us in the examination of the issue. I look forward to hearing your comments and recommendations on the proceedings that might be taken to improve this process.

The first witness, Bill Lee, chairman and chief executive officer of Duke Power, appearing today on behalf of the Edison Electric Institute, the Atomic Industrial Forum, and the American Nuclear Energy Council, accompanying him is Bart Cowan, chairman of the Atomic Industrial Forum Lawyer's Committee.

I am personally aware of the yeoman work of Bill Lee, and I believe very much that if he had not been involved in the lessons learned activities after Three Mile Island, that indeed the industry would be in tougher shape than at present.

I would explain that there will be several rollcall votes this morning. That is the way it is. They stacked some votes last week. I will be in and out, but hopefully Senator Mitchell or one of the other members of the subcommittee will be here to cover. I hate to have witnesses come and not present the testimony before Senators. So I will make every effort to go and vote and return as soon as possible.

So with that, I welcome you back before the subcommittee. You may proceed, Bill.

STATEMENT OF WILLIAM S. LEE, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, DUKE POWER CO.

Mr. LEE. Thank you, Mr. Chairman.

In addition to the representations that you cited, the Edison Electric Institute, the Atomic Industrial Forum, and the American Nuclear Energy Council; the National Rural Electric Cooperative Association has been invited to appear here. They had to be out of town. They asked that I bring their testimony, the NRECA, and I will file it as part of the record. Their testimony substantiates what I intend to cover in these few minutes.

Senator SIMPSON. Without objection, it will be included in the record.

Mr. LEE. Also accompanying me are Bart Cowan and Eugene Pokorny of the Cambridge Reports. Eugene is sitting over here next to the red flag, and he has some very interesting information to impart to your committee in a few moments.

We thank you for the opportunity to talk about reform of the licensing process, a reform that I think can enhance safety. We need this legislation really for four fundamental reasons: First, it can improve the safety of the existing plants; second, it can enhance the safety of any future plants that our Nation may commit; third, it can bring stability to the NRC licensing process without which, sir, there will be no future plants; and fourth this proposed legislation can indeed enhance the opportunity for public participation in licensing decisions and at a point where such participation can be effective in really shaping the outcome rather than waiting until the 11th hour.

In my oral summary of my testimony, let me make four points and a list of recommendations.

First, economic growth in our Nation is linked directly to our Nation's ability to supply electricity, and the nuclear option must be included if that need is to be met. Every increase in our gross national product has been accompanied by a slightly larger increase in the national electric power demand. With conservation and load management, the rate of growth of electricity has slowed to near the growth rate of GNP, but continuing economic growth in our Nation will require a concomitant growth in electrical supply. With conservation and load management and solar and geothermal and hydroelectric and cogeneration and other things, they will help meet that new demand, but they cannot do it alone by a long shot. The only two fuels that we have in this country in sufficient supply to make a significant contribution to future electric supply are coal and uranium. We don't believe that we ought to rely exclusively on only one of those fuels, but both ought to be available to meet the future electric supply. So the first point is economic growth demands more electric supply, and uranium as a fuel has got to be part of that scenario.

The second point is the nuclear industry recognizes that the primary responsibility for safety in construction and operation of nuclear plants rests first with the individual utility. It rests also with the industry and, as you know, Senator, industry has taken giant steps to really police one another in the area of safety. Further than that, the NRC is required by law to set the grounds. However, its regulatory function is necessarily limited to oversight of safe construction and operation of licensed facilities. Again, the primary responsibility for safety rests with the utility, and this was recognized in the Kemeny Commission Report on Three Mile Island. And we need to keep this in mind as we address reformation of the NRC regulatory process.

As a response to TMI, an example of industry responsibility for safety is found in the formation of the Institute of Nuclear Power Operations, established in 1979 and now has grown to a 350-person, $35 million a year organization of engineers, scientists, and specialists, whose job is to establish benchmarks for excellence. Since INPO began, their teams have evaluated performance at every operating nuclear powerplant in the Nation. They have recommended improvements in each one of those plants. And they have gone back and checked and monitored the implementation of those safety improvements. INPO has initiated a program to improve the quality of design and construction of nuclear powerplants. INPO has established training program accreditation and scholarship programs and more recently started a program in design and construction quality. INPO's success is demonstrated in part by the fact that now 13 foreign nations have come and joined its ranks. As an example of the institutional nature of INPO's work, Senator, you may recall prior to Three Mile Island there was no system of timely sharing operating experiences among operators of nuclear plants. INPO has established and has in effect a national system of telecommunications connecting every nuclear utility so that experiences and significant events at any plant can be immediately shared by every plant in this country. Incidentally, the foreign nations have now tapped into that timely telecommunications system so they can keep abreast of the experiences. That is an example of industry assuming responsibility for safety.

The third point is it is clear that the regulatory process has been a major contributor to the escalating schedule and increasing costs of nuclear plant construction and operation. From mid-1974 to the present time, there has been an increase of approximately 70 percent in the time required from planning to operation of a nuclear powerplant. We now take much longer than any other nation in the world to build these plants. A major component of the schedule escalations and increased costs is the instability of the NRC's regulatory requirements. New nuclear capacity must now be planned and scheduled some 12 years in advance of its need. This extends the planning horizon beyond the period in which our crystal ball can predict demand with a reasonable degree of accuracy.

Unstable NRC requirements also contribute directly to the increasing costs of nuclear powerplant design, construction and operation. Some of these required plant changes imposed by NRC enhance safety; however, there is no systematic evaluation by NRC of the impact on overall safety of a particular requirement or of the cost and benefits of any given changes. In addition, the sheer enormity of the changes and their frequency are placing a severe strain on the industry's manpower and financial resources to respond, with the danger that particularly personnel resources, focusing on constantly changing requirements, are diverted from those same people concentrating on safety.

In an effort to understand the cost and schedule impacts of NRC regulation, last summer the Edison Electric Institute conducted a survey of nuclear plant operation. While it is not possible to precisely distinguish and quantify costs and delays caused by the regulatory process compared to others, the overall results of the survey suggest the cost of regulatory changes for plants which have received licenses since 1970 or will soon receive a license run to tens of billions of dollars. A detailed discussion of this survey and specific examples of how the regulatory process is affecting specific plants is included in my written testimony.

In short, despite industry's commitment to safety and the need for nuclear energy, the nuclear option is no longer viable in large measure because of the instability of the regulatory climate. The stability of regulations is my third point.

My fourth and final point, Mr. Chairman, relates to the need for extending the NRC's authority to issue a temporary operating license, which authority expires at the end of this year, December 1983. We ask that that authority be extended. The reason is because of the time required for the NRC's response to TMI and because of, in our case, our company's success in building our Catawba Plant ahead of schedule. We expect that plant to be ready to operate at full power before the drawn-out hearing process is completed. All documents for temporary operating license have already been issued, including the filing of State, local, and utility emergency plans, yet the hearing process drags on and on. The notice of opportunity for hearing was published by the NRC 2 years ago, June 1981. A number of prehearing conferences have been held but the hearing itself isn't scheduled to start until October 1983. And in the words of the hearing board chairman, "We cannot predict now whether this case can be completed by May 1984." That would be essentially 3 years after the notice of hearing. My experience teaches me to be very skeptical that hearings and decisions can be finished when anybody has to make them this far in advance. But more importantly, we expect to be ready to load the fuel in May of 1984 and possibly as early as February if we continue to make the progress we have demonstrated.

There are 11 other nuclear powerplants in the Nation with contested hearings scheduled to be ready to operate in late 1983 or 1984. A 1-year extension of the NRC's authority to issue temporary operating licenses may fit some of these plants as well as Catawba, and I submit it is in the public interest and urge you to provide that extension. The authority was granted to the NRC but was never exercised up until now. The reason it was not exercised is the NRC did an extraordinary job of marshaling their staff resources and addressing their licensing backlog. At the same time, the utilities were later than they expected in completing construction, in part because of additional backfitting. So the early NRC staff review and late completion made temporary licenses unnecessary. Now we are coming to the point where it is not staff review or late construction but rather the extended hearing process that seems to be the critical path, and we respectfully submit the need for an extension of that authority.

So, in summary, here are our recommendations:

One, require the NRC to analyze any proposed new or modified regulatory requirement to determine if, on the basis of the impact on overall plant safety and the resources required, such a requirement is indeed justified.

Two, mandate by legislation the use of hybrid procedures for public hearings to replace current adjudicatory hearings. In my view, this will do two things—it will enhance safety by freeing wasted resources and it will give an opportunity for effective and meaningful public participation where such participation could possibly contribute to safety and not be after the fact.

Three, provide for issuance of a combined construction permit and operating license in a one-step licensing procedure for future applications.

Four, authorize approval of a standard plant design, and direct NRC to establish procedures to encourage such standardization.

Five, provide for preapproval of sites, separate from a facility application.

Six, provide for early public participation in the decisionmaking process. Under our recommendations, there will be three such opportunities early on.

And the final recommendation is because the prehearing procedures are stretching out longer and longer, it takes 3 years or more for an operating license for a plant co-owned by my company, by municipalities, and by rural cooperatives. We urge the extension of the NRC's authority to issue temporary operating licenses.

My written statement addresses the extent to which both the NRC version and the DOE proposed legislation includes these elements and I will, therefore, not repeat our views in this regard. But I do want to emphasize that, on balance, we prefer the DOE bill because it more directly addresses and resolves the problems of the nuclear licensing and regulatory process which I have identified.

Mr. Chairman, I thank you for the opportunity to appear before the subcommittee and summarize my views. I have two associates with me. At this time, with your permission, I would like to introduce Mr. Eugene Pokorny, who is president of the Cambridge Reports, for a short presentation about a nationwide public opinion survey recently conducted by Cambridge Reports which bears on your consideration of this proposed legislation.

Senator SIMPSON. Thank you, Bill.

We now have a rollcall vote on. I will have to leave. The second bell will be in just a moment. You might begin but I will have to necessarily leave. There is a stacked vote so I will have to stay for at least 10 or 15 minutes. I have just about 2 or 3 minutes. I can't stay 5 minutes.

STATEMENT OF GENE POKORNY, PRESIDENT, CAMBRIDGE REPORTS, INC.

Mr. POKORNY. All right, let me do this very quickly, Mr. Chairman. My name is Gene Pokorny, president of Cambridge Reports. I will make this brief. We are a public opinion research firm in Cambridge and we concentrate on economic and public policy questions.

We were asked in the last 6 weeks to conduct a survey of 1,000 American voters on their attitudes toward nuclear licensing issues. What was interesting is that 84 percent of all the voters in the country know the Federal Government has to grant an operating license and 89 percent actually know the industry is regulated, which is significantly higher than a number of other industries, the oil industry as an example. So there is a high awareness that the industry is regulated.

As you turn to the second issue, you find only 44 percent of the voters think regulation is more strict than the regulation of other kinds of powerplants. Though interestingly in this area the voters will say they do know that the industry is regulated, when you turn down here, 29 percent of them say it is excellent or good, which is moderately critical. But it is a better rating of regulation than regulation of other industries. In other words, they are saying 29 percent believe regulation in this area is excellent or good but it is better than the regulation of other American industries.

When you turn to their specific views on a series of licensing changes, let me just go through these relatively quickly.

Senator SIMPSON. You are never going to make it and I won't make it. Let me come back. I must say we might have Mr. Cowan submit your testimony to the staff. I hate that, but we never are going to get through the day with these stacked votes. I very much want to see that. We will work that in later in the morning. You do have a statement?

Mr. COWAN. Yes, Mr. Chairman.

Senator SIMPSON. Would you present that to Mr. Curtiss. I hate to do that. But when I come back we will have several questions and we will hear the rest of the survey.

How long would it take to complete your remarks?

Mr. POKORNY. I planned for about a total of 5 minutes.

Senator SIMPSON. Fine. I will be back.

STATEMENT OF BARTON Z. COWAN, CHAIRMAN, LAWYERS' COMMITTEE, ATOMIC INDUSTRIAL FORUM

Mr. COWAN. I appreciate the opportunity to testify before this subcommittee on this very important subject of nuclear regulatory reform.

As you are aware, I am a partner in the Pittsburgh law firm of Eckert, Seamans, Cherin & Mellott, and have been involved in matters relating to nuclear law and nuclear licensing for over 20 years. I am appearing here in my capacity as chairman of the Lawyers' Committee of the Atomic Industrial Forum and as cochairman of a joint committee of the forum, the Edison Electric Institute, and the American Nuclear Energy Council formed in early 1982 to work on licensing reform. Members of our committee have been involved in the licensing of almost every domestic nuclear powerplant since the inception of the commercial nuclear industry in the 1950's.

I have a prepared statement which I hope will be included in the record and I would like to briefly mention some of the highlights of that statement.

With respect to the need for licensing reform legislation, improving the focus on safety of the plants is the most important justification for reforming the licensing process now. In addition, regulatory reform, as we envision it, should afford the public a better opportunity to have a more meaningful and more timely input into the licensing process. And, finally, regulatory reform is needed to instill discipline and to reestablish a sound framework for regulation of nuclear facilities and to eliminate as much as possible the current instabilities which are in the process.

Both the DOE bill and the NRC bill address each of these major areas of licensing reform, and in my statement I go into substantial detail as to where we agree or disagree with the regulatory reform proposals put forth by the Department of Energy and the Nuclear Regulatory Commission. In some instances, I suggest alternatives which we believe would result in a sounder regulatory process. We believe the DOE bill in its approach represents realistic reform and, accordingly, we strongly favor the DOE proposal in its major essence. I am sorry to say that while some positions of the NRC proposal are well conceived and very desirable in some instances, the proposals of the NRC for reform do not make the kind of changes which are necessary and meaningful, and provide only the illusion of reform without the substance.

Reform is necessary and desirable in five areas: Backfitting, single-stage licensing, hybrid hearings, early site review and approval, and approval of designs. Let me briefly comment on several of these areas, although I am prepared to answer much more detailed questions with respect to each of them.

First, backfitting. We view that as the single most important aspect of licensing reform and think it is desirable for the Congress to provide the Commission with the type of direction and legislative guidance on backfitting which is embodied in the DOE bill. Everyone agrees there is a value in requiring a disciplined, documented justification for imposing new or modified requirements and a high level of review for each such justification. It is just the disciplined, documented approach that is lacking today. As noted by Chairman Palladino when he testified here last month, the current Commission regulations do not provide a satisfactory basis for backfitting, and indeed they have not been used and have been ignored by the Commission. In our view, the current situation is unlikely to be relieved by the Commission through administrative change. We believe that a sound backfitting provision should contain four elements, which are discussed in detail in my prepared testimony. Briefly, they are: First, the standard to be applied in order to establish when a backfit will be required; second, a comprehensive definition of backfitting; third, items to be analyzed in determining whether the standard has been met; and fourth, the procedure to be utilized in determining when the standard has been met. Although we have some minor difficulties with certain wording in the DOE proposal, we believe the DOE approach on each of these is sound.

The second area of regulatory reform is single-stage licensing. There is a compelling need to allow a facility to be licensed for construction and operation in a single proceeding and thereafter to proceed through construction into operation without the necessity of undergoing a second hearing and an operating licensing stage. We believe it is possible to provide sufficient design information and criteria when a plant is proposed to be built to enable the Commission to determine at that time when the facility can be constructed and can be operated in conformity with the Atomic Energy Act and Commission regulations. The opportunity for the public to provide input to the process should be afforded at this stage where the input is meaningful, before the planned facility has received authorization for construction. Thereafter, it should be the responsibility of the Commission, through its staff, to determine whether the facility has been constructed in accordance with the license.

We agree with the thrust of Commissioner Gilinsky's comments before this committee last month that it is essential that every new plant receive a thorough preoperational NRC review, and by that we assume the Commissioner was referring to thorough inspections. However, contrary to his comment, no industry group of which I am aware wants to eliminate that preoperational inspection. Inspections by the staff are welcome. But to leave open for challenge in hearings until plant construction is almost complete and operation is imminent fundamental issues as to the ground rules for building and operating the plant introduces uncertainty and unpredictability, without contributing to safety. Procedures should be available for the public to bring before the NRC alleged violation of the license. In this regard, we concur with the views of the Commission's ad hoc committee that regulations currently in existence in 10 CFR section 2.206 are appropriate and adequate.

We believe the DOE approach to single stage licensing is sound, while the Commission's approach does not provide for single stage licensing at all. The Commission approach is unresponsive in this regard to the problems created by the current dual licensing approach.

Let me turn to the hearing process for a moment and discuss hybrid hearings. We support the concept of hybrid hearings and favor making use of such hearings mandatory. Although conceptually it may be desirable to make hybrid hearings optional for individual hearings, we believe such an approach would make the hearing process unpredictable and vulnerable to judicial contest and reversal. If hybrid aren't mandated, we see great reluctance on the part of the Commission or any applicant to depart from the type of hearings we have today to the unknown of the discretionary hybrid hearing. Accordingly, we support the DOE version of the proposal in which hybrid hearings are made mandatory.

With respect to early site review and approval, we strongly endorse and support that concept, and also we strongly support the concept of design approval. We note that for each of these concepts deferral of payment of fees is provided in some measure, and we believe such deferral of payment is highly desirable since that will provide an important incentive to the investment of resources necessary to obtain early site approvals or approval of design.

Two other comments to complete my oral remarks.

First, while we support the elimination of duplication decisionmaking by Government agencies, we do not believe it is appropriate in a general nuclear licensing reform bill to address the issue of Federal, regional or State certification of need for power. We believe this is more appropriate for consideration in separate legislation since it is but a part of the broader Federal-State relationships.

Second, both the NRC and DOE bills introduce the National Environmental Policy Act of 1969 into the Atomic Energy Act. While we believe consideration of the environment under NEPA is important under nuclear licensing, we do not believe it is appropriate to amend NEPA or add to or detract from NEPA in nuclear licensing legislation. We would urge deletion of the references to NEPA in the proposed legislation.

That concludes my comments.

Mr. CURTISS.[1] Thank you, Mr. Cowan.

We will take a short recess and upon return of the chairman reconvene the hearing.

[Brief recess.]

Senator SIMPSON. We will come to order please.

Let's go forward with your presentation Mr. Pokorny, I would like to have that, and then there will be another rollcall vote. Senator Mitchell will go and vote, he will come back and proceed while I go vote so we will have continuity.

Please present that, and then if the next witnesses could summarize their remarks in 5 minutes each I would appreciate it. The full testimony, of course, is admitted into the record. If you could summarize in 5 minutes then we will have time for questioning. I have another commitment at noon that I must be at.

STATEMENT OF GENE POKORNY, PRESIDENT, CAMBRIDGE REPORTS, INC.—Continued

Mr. POKORNY. Thank you, Mr. Chairman.

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[1] James R. Curtiss, professional staff member, Committee on Environment and Public Works.

What I was starting to say was that there were 1,000 people interviewed in our sample of the American voting population, in that the surveys were conducted about a month ago. The survey had essentially three objectives. First, we wanted to understand what the public knows about the current Federal regulations; second, how do they evaluate them; and third, do they favor or oppose various changes in these regulations.

When we look at the first objective, we find that 84 percent of all the voters in the country correctly know a Federal license is needed to operate a nuclear powerplant, and 89 percent know that, in general, the industry is regulated. One of the things we found fascinating in the date was that this number is higher than the 69 percent who know the oil industry is regulated by the Federal Government. When you consider the oil problems of the country in the last 10 years, this lower level of this awareness is interesting. Thus, with regard to nuclear regulation it is widely known and people are aware of it.

If you asked the public a series of specific awareness questions, for example, were they aware the Federal Government evaluated the design and construction of plants, were they aware that the Federal Government evaluated the need for a plant, awareness here too is high. In all cases it was over 50 percent—ranging generally in the area of 65 to 75 percent.

One thing, however, the public was not aware of was the length of time that it takes to go from planning to operating a nuclear powerplant. The median estimate of all the voters in this country was that it took 6.4 years to build a nuclear powerplant. We then told the respondents that, in fact, it takes about 12 years and ask them why they thought that was the case. The answers were Government regulation and concern for safety.

Essentially my bottom line in the first area of inquiry is that the public is aware of the nuclear regulation. Let's now go to the second objective we pursued in the survey.

When we go on and ask whether or not the public thinks the Government regulation of the nuclear power industry is more or less strict than of other industries, we find that 44 percent think it is more strict.

All right, let's go to some specific evaluations they have of these regulations. Of those knowing about regulations—the 84 percent who know a Federal license is required only 29 percent believe that the Federal regulation of nuclear power is excellent or good, a moderately critical rating. Even so, however, 47 percent of these people say the Government is doing a much or somewhat better job of regulating the nuclear industry than other industries, 37 percent say it is doing a much or somewhat worse job.

Turning to the third survey's objective, which is support for various proposed changes, I would like to present the results here very briefly in the next eight slides. These slides show the feelings of the voters of the country with regard to eight proposals that we tested. As you know, how you word a question in a survey can affect the answer. Therefore, I would like to read the actual questions asked of the voters in these eight instances.

The first, do you strongly favor the following: "the Federal Government consider whether or not changes in the design and operation of nuclear powerplants will improve the overall safety of the plants before ordering these changes?" Ninety-three percent favor this, while 6 percent oppose.

I might add that these 8 questions today are in the order they were in the actual survey and that there is a 16-point variation in the favorable responses. Thus, people weren't in total agreement equally with all proposals.

The next question, "Do you favor or oppose having the Federal Government weigh how much changes will actually improve the safety of nuclear powerplants against how much these changes will cost consumers?" The numbers here, as you can see, are 79 percent favor to 19 percent oppose. So it is significantly below the last one, but still an overwhelming majority.

The third one we tested was, "Do you favor or oppose shortening the amount of time it takes to license nuclear powerplants provided it would not reduce the overall safety?" In this case, these responses are 81 percent favor to 16 percent oppose.

The fourth one, "Do you favor or oppose shortening the amount of time it takes to license nuclear powerplants if it would result in lower electric bills for consumers?" Eighty-two percent favor to 17 percent oppose.

Fifth, "Do you favor or oppose holding one set of public hearings before an electric utility company starts building a nuclear powerplant to settle all of the important issues, rather than waiting to resolve the issues until a plant is almost completed and ready to begin operation?" In this case, it is 85 percent favor to 13 percent oppose.

Sixth, "In making the public hearings on licensing nuclear powerplants less formal and courtlike," the responses here are 80 percent favor to 17 percent oppose.

Seventh, having the Federal Government approve standard design for nuclear powerplants that could be used by several electric utility companies without going through the approval process for each plant. To this proposal it is 77 favor to 21 oppose.

And, finally, permitting the Federal Government to approve or disapprove a particular location for a nuclear powerplant before a utility company actually decides to build a plant at that location, and providing as a result an earlier opportunity for the public to voice its opinion. Here, as you can see, 83 favor to 16 oppose.

Just to summarize, the range of favorabilities we saw in these eight questions was from 77 percent to 93 percent—a 16-point range. In all cases, clearly a majority, favored the proposal asked.

Essentially, then the bottom line is that the public, with regard to the first objective has a high awareness of the current regulatory procedure. Second, the evaluation of the regulatory procedures were moderately critical, but interestingly even though they felt that way, they said the regulation of nuclear was better than other industries. And third, when asked about possible regulatory changes, the support for them was really quite high.

At any rate, these are my remarks. I have a fuller statement I would like to file with the record.

Senator SIMPSON. Without objection. Thank you. Very, very interesting statistics.

I had just a few questions and I will submit the bulk of them in writing, but I would ask, Bill Lee, a question that has been on the minds of many members of the subcommittee and others, and it comes up and it will continue to do so. We have not seen an application for nuclear powerplants for over 4 years, and most estimates are we won't see another for a good while. In light of this, why should Congress, at this time, be addressing licensing reform?

Mr. LEE. Mr. Chairman, there are two reasons. One impacts all of the existing plants, those running and those soon to be completed, with respect to an overall safety assessment of the proliferation of independent backfitting decisions. It is in the interest of safety and it is in the interest of the consumer that a disciplined overall approach be brought to bear on backfitting. We have not demonstrated in some 20 years that that is under control.

The second reason, yes, there are no new applications, and this is a threshold. There will never be any additional nuclear applications, in my opinion, unless the licensing process is stable and predictable. I cannot represent to investors how much a nuclear plant will cost nor how long it will take to build under the present environment. Therefore, under the present situation I could not be in a position to recommend one. And I think as our Nation needs additional electricity, knowing there is only uranium and coal in substance, as a Nation we have to decide we want both, and if we do we have to bring stability to the licensing process.

Senator SIMPSON. From the testimony of the NRC and DOE, I gather each of what is being proposed in these two bills could actually be accomplished by the NRC through administrative changes, issues such as backfitting, standardization, and the safety goal provisions are some of the examples. What is the advantage, if any, of addressing issues such as these in legislation rather than through the administrative changes?

Mr. LEE. Stability is a one-word answer, Mr. Chairman. We have had 20 years of experience with administrative changes and we have not got stability. We think the NRC, both as presently constituted and as may be in the future, needs a strong signal from the Hill that we want stability in the licensing process if our Nation is going to successfully use this source of fuel.

Senator SIMPSON. I just have one final question. As I say, I will submit the rest of these. I am interested in the connection between what we might do in this legislation and the issue of quality assurance or quality control. Is there a connection between these two issues, in your view? I know you shared with us your views on that, but what changes in particular would strengthen the Commission's ability to bring more rigorous scrutiny in the issue of quality assurance?

Mr. LEE. With respect to the existing plants, Mr. Chairman, I think that quality control and quality assurance can be enhanced if we have an overall disciplined approach to the backfitting problem that is now diverting resources helter-skelter. With respect to new plants that may be proposed in the future, the further refinement of design and identification of all the criteria with respect to construction, the training that will be undertaken, all of those early identifications, will give the utility a clear direction and focus through the life of the project, instead of constantly changing through the life of a project, and enable them to understand what is expected and thereby define the quality control and quality assurance needs.

I will say that outside of this legislation the Institute of Nuclear Power Operations is now getting very much into the application of quality control and quality assurance during the design and construction phase, and just as in the operating phase its impact is felt over the country.

Senator SIMPSON. Thank you very much, and I do apologize for the rather harried series of questions and the gaps here. I will submit the remaining questions in writing, and others of the committee may wish to do so. Thank you very much, both of you for your understanding.

Next please Mr. A. Philip Bray, vice president and general manager of the nuclear power systems division of the General Electric Co., and James S. Moore, vice president and general manager, water reactor division, Westinghouse Electric Corp. If you could please summarize each of your remarks in 5 minutes, I would be deeply appreciative.

Mr. Bray, please proceed.

STATEMENT OF A. PHILIP BRAY, VICE PRESIDENT AND GENERAL MANAGER, NUCLEAR POWER SYSTEMS DIVISION, GENERAL ELECTRIC CO.

Mr. BRAY. Thank you, Mr. Chairman. I am A. Philip Bray, vice president and general manager of the nuclear power systems division of the General Electric Co. I have been associated with the U.S. nuclear power program since its beginning over 25 years ago.

I am honored to be here today to testify for General Electric on the nuclear licensing reform proposals contained in Senate bills 893 and 894.

I want to expand on one aspect of my prepared statement, the key role standardization can play as a reform measure.

The potential benefits of standardization are well stated by the Commission in its legislative proposal, and I quote:

> There is a need to encourage the development and use of standardized nuclear powerplant designs because such designs can benefit public health and safety by concentrating the resources of designers, engineers, and vendors on particular approaches, by stimulating standardized programs of construction practice and quality assurance, by improving the training of personnel and by fostering more effective maintenance and improved operations, and because the use of such designs can permit a more effective and efficient licensing and inspection process.

Standardization could also permit more effective public participation by affording the public an opportunity to have its questions considered earlier in the process—prior to any major utility commitment to a plant design. More importantly, the public would be better informed about these standard plants because the hearing will be held with respect to a complete and final design being applied to a proposed site of their interest. This will certainly provide a greater information base for them.

I am bothered that some say that there is no need to straighten out the nuclear licensing mess with a move toward standardization at this time since no utilities are buying nuclear powerplants today. I believe the opposite, and agree with Mr. Lee's statements just now. Utility executives are telling me that it would be irresponsible to order a nuclear plant until the process is made more orderly.

It wasn't too long ago that this Nation built safe nuclear powerplants in 4 or 5 years. In fact, General Electric and Bechtel just finished constructing two boiling water reactor plants in Taiwan in just 5 years each—plants that meet all of the latest U.S. safety requirements. This success is happening in other nations as well. But in the United States, nuclear plant construction takes an average of 10 or 12 years. This brings the interest and escalation costs of the plant to such a high level that it more than doubles the cost of the project, with possibly negative impacts on safety.

It has been very disappointing to me personally to note how successful foreign nations have been in their use of standard plants when compared to the United States. We are the ones who have been calling for standardization from our Government long before other nations even had a viable nuclear program. But now they have the positive results of standardization while we are still discussing its need. The Japanese, the French, and now the Germans have programs in which total standard nuclear plant designs are approved, and used time and time again without re-review on approved sites. That is what our country needs.

In the nuclear industry today we use an obsolete system of regulation. It may have been OK years ago when the industry was in its infancy; but it is no longer appropriate in this age of standardization. In the early days when a utility built a nuclear powerplant with a supplier and an architect-engineer, he told the AEC of his intent and provided the principal design and architectural features of a custom plant as the basis for his construction permit. Then the team evolved the design, consulted with the AEC on questions, and built the plant in about 4 or 5 years. Then the utility returned to Washington, documented the final design, satisfied the AEC and received an operating license. A pioneering atmosphere existed then.

Today, however, utility specifications call for designs that are already final and call for the supplier to warrant that the design is licensable. It is even desirable to show that the design has already been employed in an operating plant. So why do we still use a system in which the NRC is required to assume that the utility is seeking an approval to build, just like in the early days?

Let's face it. The NRC should be approving the standard design of the supplier long before the utility arrives at the NRC and requests permission to use the standard design on his approved site.

Granting certification to manufacturers rather than just issuing an operating license to users has long been successful in many American industries. For instance, the FAA grants certification to Boeing on a new 767. FDA grants a certification to Eli Lilly on a new wonder drug. Why not us? Why not grant what I like to call a power worthiness certificate for final nuclear plant designs based on determinations that they are safe and usable. Make the nuclear industry like America's other successful industries. That is the basis of the two bills before you.

Since standardization was first discussed between the nuclear industry and the AEC over a decade ago, General Electric has been advocating its use to improve safety and control costs and to give the United States a viable and acceptable nuclear industry.

The General Electric current nuclear powerplant design has been under safety review for the past 10 years by the NRC under a program called GESSAR. GESSAR was submitted in 1973 to the AEC and approved in 1975 by the NRC for construction permits. As many as 20 domestic nuclear plants referenced GESSAR to help obtain their construction permits.

GESSAR was resubmitted to the NRC in 1980 with an entire final design of all systems important to radiological safety. One hundred percent of the safety information required for an NRC safety review for granting an operating license was provided in GESSAR. The NRC has issued a very favorable safety evaluation report on GESSAR which concludes that all safety issues have been resolved. The advisory committee on reactor safeguards is in the process of writing a letter to Chairman Palladino reporting on the committee's satisfactory review. General Electric is very pleased with this GESSAR experience.

Now congressional action is needed. For standardization to become a commercial as well as regulatory reality it should be a clear part of the law so that the U.S. utility industry and its executives, like Mr. Lee, can depend on it for future projects. Congress is the only body which can give this concept the stamp of national approval.

In summary, with positive congressional action, the American nuclear industry can prepare itself for future nuclear plants in a safe and orderly manner. Without it, the nuclear option may not be available for America when we need it.

Mr. Chairman, this completes my brief statement. I would be happy to answer questions when appropriate.

Senator SIMPSON. Thank you very much.

Now, Mr. Moore.

STATEMENT OF JAMES S. MOORE, VICE PRESIDENT AND GENERAL MANAGER, WATER REACTOR DIVISIONS, WESTINGHOUSE ELECTRIC CORP.

Mr. MOORE. Thank you, Mr. Chairman. I am James S. Moore, vice president and general manager of the water reactor divisions of the Westinghouse Electric Corp. Accompanying me is Edward P. Rahe, who is manager of our nuclear safety department.

By way of introduction, the water reactor division employs 9,000 people in 13 countries worldwide. We are responsible for the design, manufacture, construction and operating plant service and fuel for all our plants around the world.

Based on 27 years of personal experience participating in all phases of the process, including licensing and rulemaking hearings, I feel proposed changes are sorely needed.

Westinghouse strongly supports the regulatory reforms proposed by the Department of Energy. DOE's proposed legislation differs significantly from that proposed by the Nuclear Regulatory Commission in that we believe it would impose much needed discipline in the licensing process and create an important incentive for development of improvement in nuclear powerplant designs.

I would like to emphasize that Westinghouse remains firmly committed to the future of nuclear power, and I believe that is exemplified in our involvement in the development of the next generation of nuclear powerplants, the advanced pressurized water reactor. This is a major cooperative initiative with the Mitsubishi Co. of Japan, one of our licensees, and a consortium of Japanese utilities. We view this endeavor as an exceptional and unique opportunity to redress many of those problems besetting the nuclear industry which are not amenable to resolution by regulation alone.

We intend to seek U.S. regulatory approval of this design as a reference standard plant. In that regard, we have initiated a major U.S. licensing program intended to lead to one-step license certification of a total final design plant. Without this underlying framework of regulatory reform, we believe an exceptional opportunity for improvement may well be lost. The ultimate irony of our situation is that, without the DOE's proposed legislation, an important American safety technology advance will be first licensed by Japanese companies in Japan.

U.S. regulatory requirements were adopted virtually verbatim worldwide during the emergence of the nuclear power industry. While everyone adopted U.S. regulatory requirements, they did not adopt the U.S. licensing process. Most countries developed their own more efficient process. Three other major nuclear-committed democracies—Great Britain, France, and Japan—each have a licensing process that addresses the substantive issues at the early stages of a project, uses a cost-benefit backfit methodology, and provides early public participation in a constructive, disciplined manner. The discipline in these processes has been a factor that has allowed other countries to construct nuclear plants in half the time it takes utilities in the United States.

At present, we see regulatory agencies in many countries questioning, and in some cases rejecting, new NRC regulations.

International bid specifications issued to date have required quoting to NRC regulations. International competition has had to bid to these U.S. regulatory requirements without the benefit of direct interaction with the NRC that U.S. companies have had. However, if the current trend of departing from the U.S. regulatory requirements continues, and we believe it will unless the NRC takes a more disciplined backfit approach, we soon may be faced with having to bid to the regulatory requirements of countries such as France, Germany, and Japan. This would eliminate one of our greatest competitive advantages and place U.S. vendors in the same position that our international competition has had to deal with to date.

The most urgent need in the nuclear industry today is to provide a rational and disciplined approach to backfitting, as indicated by Bill Lee, Phil Bray, and others. Westinghouse stands to benefit from NRC imposed backfits. Backfitting generates business for us. But the changes should not be made unless they are justified on a rational, cost-benefit basis, and to recommend otherwise is really doing a disservice to ourselves in the long haul, to the industry and particularly to the public.

Preapproved designs, particularly if utilized in conjunction with preapproved sites and protected from unnecessary backfitting, have the potential to greatly increase licensing stability.

The DOE proposal for one-step licensing will require increased discipline on the part of all parties to the regulatory process. Applicants and designers will have to provide a much greater amount of detailed design information at the combined construction permit/operating license stage than now required.

One of the things I have emphasized in my remarks is the importance of regulatory reform now if we are to maintain the American position in the international nuclear market. In concluding, I want to give you some figures which illustrate the overall importance of the international market to the American public.

A single nuclear powerplant export award represents approximately 15,000 man years of direct employment plus another 15,000 man years of indirect employment spread over a 6 to 7 year design and construction period. Over the lifetime of the plant, as many as 30,000 man years of additional employment may be provided through the supply of replacement fuel, components and technical services. This means jobs for Americans, and it is a real shame to let this opportunity to increase employment for American workers slip away.

In conclusion, for all the reasons we have stated, we support the DOE proposal, Senate bill 894, with the changes recommended by the AIF and those I have suggested. We respectfully urge you on this committee to recommend those proposed changes to the full committee and Senate. I would like to thank you again for this opportunity to speak to you.

Senator SIMPSON. Thank you very much. I have another rollcall and Senator Mitchell will be here in a few moments and I will go vote. But I am intrigued, Mr. Moore, by your testimony with regard to the agreement with the Japanese to pursue this advanced pressurized water reactor. Apparently that is more significantly sophisticated than reactors currently operating and would provide an even greater degree of protection to the public health and safety. Why is it, then, in your judgment, that this country's most advanced technology will be first licensed in Japan and not here?

Mr. MOORE. Part of the process, Mr. Chairman, is it is an economic consideration. Our industry today now in the United States, as you know, is flat with respect to new orders. The Japanese have an ongoing, viable program. So we are able with our licensees to collectively work on a development program that is well over $100 million, something we could not justify ourselves today based on the U.S. market.

You may not be aware, we have arrangements with some 19 licensees around the world and we have the ability to get their information as well. So we have access to all their technology. So we can build on all our licensees experience to compete effectively. We have picked this program with the Japanese. They are going forward. It is a real plant they expect to get. They have a very efficient one-step standardized plant licensing process in place to accomplish that which, in the absence of a similar process in the United States, will allow them to license this advanced design first. We are trying to work with our U.S. NRC in parallel to go down the same road, but we don't have the disciplined process. And, frankly, we are concerned that without that discipline, some of the new features are concerned would be unnecessarily backfit to current plants which are already quite safe.

Mr. BRAY. Mr. Chairman, may I make a comment?

Senator SIMPSON. Yes.

Mr. BRAY. Although I didn't include that in my remarks, development of the advanced boiling water reactor is also in Japan. Both of our companies bring our advanced engineers to Tokyo, not Washington, because their standard plant approach to licensing allows us to introduce new advanced reactor concepts without messing up the regulatory process on all plants under review at the current time. This is very disappointing to both our companies, but it is because of the one-step process they provide.

Senator SIMPSON. Is there any evidence to suggest that their reactors are operating so with any less degree of protection of the public health and safety than ours?

Mr. MOORE. None whatsoever.

Mr. BRAY. I agree with that. Most of them to date, built by U.S. suppliers, meet all of the existing U.S. regulatory requirements. They just do it in a one-step process or a standard plant approach.

Senator SIMPSON. How long have you noticed this departure from U.S. regulatory requirements by foreign regulatory bodies?

Mr. MOORE. Well, I spent 4 years running our nuclear operations in Europe starting in 1975, and way back then there was this kind of attitude prevailing among the licensing people.

Senator SIMPSON. Let me ask you, Mr. Bray, some who take a close look at the issue of standardized nuclear powerplants maintain the industry has not yet reached a sufficient level of maturity to warrant greater emphasis on standardization. In particular, critics argue the incentives for standardization contained in both bills might, in fact, discourage innovation to make reactors safer or more productive. What is your response to those who take that position?

Mr. BRAY. I strongly disagree. I look to other industries that use a standard approach, the aircraft industry, for example. It is through freeing up of our advanced engineers from designs of the 1972 vintage by getting those designs recognized as acceptable so we can go on to newer designs. It was only after the 747 was approved that Boeing could release its advanced engineers to work on the 757 and 767; 5 years to 10 years from now I will still have engineers tied up answering questions on operating license applications of designs 10 and 15 years old. What I see in standardization is, the manufacturer bringing his product to Washington, having it certified as acceptable and good, and releasing the designers to new advanced concepts. And during that period it is the operating companies and utilities that can take advantage of these certified designs. Today, I feel like Mr. Lee, it would be irresponsible to take a chance.

Senator SIMPSON. If a utility applicant were to submit essentially complete design information under the Commission's regulations and the Commission approved the proposed design, why is it that this approach does not provide the stability and certainty necessary to encourage more utilities to submit "essentially complete design information?"

Mr. **Bray**. I abide by Chairman Palladino's comment to you, sir, in this subcommittee, and that is: Can one really trust that the administrative approach used by the current makeup of five Commissioners will remain the same throughout the construction period of the powerplant, or do we not need an explicit policy that a certified design, reviewed and approved, will stay certified beyond the current incumbency of the Commissioners of the NRC?

Mr. **Moore**. And may I add as to that, doing that up front design to a high degree of completion represents a significant investment, and the incentives aren't there today because of the uncertainties that Mr. Bray has indicated.

Senator **Simpson**. Thank you very much. Very helpful. I appreciate it. I will submit some questions in writing.

The third panel Mr. Milton Levenson, executive engineer of the Bechtel Power Corp., and Mr. William J. L. Kennedy, senior vice president, Stone & Webster.

If you would present your testimony to Mr. Curtiss, I will go vote and when I return we will have some questions.

STATEMENT OF MILTON LEVENSON, EXECUTIVE ENGINEER, BECHTEL POWER CORP.

Mr. **Levenson**. Thank you, Mr. Curtiss.

I am Milton Levenson, executive engineer for Bechtel Power Corp., and I wish to express my appreciation for this opportunity to comment on the subject of nuclear licensing and regulatory reform.

My background is slightly different than that of the other witnesses here this morning in that while I have never worked for the NRC or AEC, I have had significant personal experience in the safety review process, having chaired the Argonne National Laboratory Safety Review Committee for more than a decade. That was in the early days when actual safety responsibility resided within the laboratory rather than in Washington.

In my opinion, legislation is required for two reasons: To provide stability for the licensing regulatory process and to focus that process on public safety.

In the interest of saving time I am just going to add a few comments to things already in the prepared statement and emphasize a few points.

First, I would like to mention that our overseas experience is very similar to that of the vendors. If we set aside French or German experience, they have done their own designs, and we talk about Westinghouse or GE plants sold abroad and the balance of the plants designed by U.S. architects and engineers to U.S. codes and standards, we build them overseas in half the time experienced by many U.S. projects. We don't violate any of the safety requirements. It is just that all the regulations are frozen the day you start construction, and revisions are applied only if they have safety connotations.

In this country we tend to mix up licensing and regulation with public safety. And, unfortunately, we are commonly burdened with a great many things that are not public safety, they are actually personal preferences of different engineers wanting to do the same thing by different routes. We somehow invented a term called "safety-related," which I am sure most people in Washington interpret completely differently than I do. A safety-related change ordered for a plant usually has not had a detailed analysis of the entire system to demonstrate that the change is increasing safety—it only means it is a change to a particular piece of hardware that has been defined as safety-related. If you reduce safety by the required change it will still be identified as a safety-related change. There have been a number of personal preferences buried under the term "safety-related."

Some version of one-step licensing is probably essential before any new plants will be ordered, as has been mentioned earlier. Since to achieve this it is important to minimize the amount of new material reviewed by both the NRC and the public, plant replication and major system replication and certainly the completion of plants already reviewed must be recognized as acceptable alternates to any new concept. In addition, new concepts can be completely defined by standard criteria, plus standard design methods, plus standard flow sheets, standard layouts, and standard system descriptions. You don't need to know what color the door knobs are or who supplied the drinking fountain for a plant to be standard from a safety standpoint.

I believe the nuclear power industry objective is more general than normally perceived. That objective is to help provide the United States with a stable, reliable, safe and as inexpensive as possible supply of electricity so essential to support economic growth, national security, and residential and industrial needs. One need only consider the cost and safety record of our domestic nuclear capacity or observe the nuclear program of other countries where national energy policies dictating cheap, safe, and abundant electric power have resulted in expanded use of nuclear power.

In summary, I believe we are facing a situation where we all agree on an overall objective and we all agree that the present system is not achieving those objectives. We may not agree on how best to solve this dilemma, but solve it we must. I believe it is appropriate and essential that the Congress take the lead and provide the legislation required to stabilize nuclear regulation and licensing. At the same time, we must find a way to set aside personal preferences and their associated immense costs to the public, without setting aside public safety. And again, I believe it is appropriate for Congress not only to express its intent but to proceed to provide the legislation that will cause that to happen.

Thank you.

Mr. CURTISS. Thank you, Mr. Levenson.

Mr. Kennedy.

STATEMENT OF WILLIAM J. L. KENNEDY, SENIOR VICE PRESIDENT, STONE & WEBSTER ENGINEERING CORP.

Mr. KENNEDY. Thank you. My name is William Kennedy. I am senior vice president for Stone & Webster. With me is Mr. James T. Ramey, vice president and senior energy adviser to the chairman of the board of Stone & Webster.

We appreciate the invitation today to appear before this committee to express our views as engineers and constructors of nuclear powerplants.

We are very much in favor of the DOE version of the regulatory bill. We are firmly convinced that improvement of the licensing process would create an environment of predictability and reasonable certainty as to licensing schedules and costs, and, in essence, to the total climate in which utilities will once again consider nuclear power plants solely on their own economic basis. At a time when approximately one-half of the cost borne by the consumer is a function of the time involved, as reflected in interest and inflation, such planning ability is imperative. In this respect, I would like to associate myself with the testimony of Mr. Lee earlier this morning.

From our perspective as engineers, perhaps the most important aspect of the proposed legislation regards the provision for approval of designs for use in plants and in discrete major subsystems prior to the application to build and operate a plant in a single licensing process. The proposed legislation would produce the following benefits: Insure and enhance the safety of the nuclear powerplants by procedural improvements that will permit and encourage greater focus on the more important questions of safety; the current nuclear powerplant cycle of 12 years or more will be greatly reduced when the several reform steps are fully implemented; the costly duplication of regulatory reviews and formal proceedings now required for each facility at the operating license stage would be omitted; utilities could plan for new capacities on the basis of a pre-approved site and design, with confidence that the regulatory requirements would not shift in midstream; the time and uncertainty entailed in NRC staff review of the full range of design considerations now dealt with on a facility-by-facility basis would be eliminated; regulatory stability and predictability would be greatly enhanced and cost correspondingly reduced by putting strict limits on backfitting changes; public hearings would take place at a timely point, before construction, in the licensing and siting process and provide the most timely information to all parties.

The key to accomplishing these goals is the pairing of single-stage licensing with nuclear plant standardization. It is important to note the proposed legislation would provide for and encourage standardized designs and single-stage licensing, but would not preclude other possibilities.

I would like to say a few words about standardization and the need for it.

We believe standardization can contribute positively in a number of ways. Repeated designs, construction, and manufacturing techniques and procedures permit increasingly efficient use of the very high-quality engineers that we do have.

In the construction of a plant, we have learned that detailed standardization pays handsome dividends. Detailed work processes involve parallel paths, repetitive operations, and require a high degree of skill. We believe that careful consideration of standard designs can lead to improved quality. We have also standardized our construction methods and procedures, such as materials controls, materials handling, storage, steel erection, concrete placement, and the like.

Unnecessary changes have frequently occurred in the past when a regulatory requirement was changed after issuance of a permit and the licensee was required to adhere to new rules. It is the combination of standard design and change control which will establish the stability so necessary for continued availability to the American public of a nuclear option. In this regard, the approach to backfitting requirements in the DOE bill, as stated in section 29(a) of the Atomic Energy Act, fulfills this need. It is in the public interest to weigh the enhancement of the overall level of health and safety to the public against the cost to the public. This balance will greatly stabilize design approvals and enhance standardization. It will also stabilize the entire industry, from plants under construction to plants in operation.

We have had a number of us mention the time it takes to build nuclear powerplants in foreign countries. Senator Mitchell, I have the privilege on this Friday to go up to the 10th anniversary of Maine Yankee in Wiscasset, Maine, which was built in approximately 5 years from a standing start. It is an excellent plant. I wish I could build some more of them just like it. With the kind of standardization that these bills allow, I think this is perfectly possible. From time to time, there seem to be some differences among the various portions of the industry regarding what standardization means. I, personally, do not think that we are as far apart as it may appear. All of us believe that the standardization together with the single-stage licensing process will put the nuclear option back before the utilities, and that without it there will be no nuclear plants.

Thank you very much.

Senator MITCHELL [presiding]. Thank you, Mr. Kennedy and Mr. Levenson. I apologize to you for the disconcerting nature of the change here. As Senator Simpson I am sure explained, the Senate is in session, in the process of voting. It is necessary to do so to complete this hearing in proper time.

I would defer now to the chairman for questioning and then, depending on his questions, may have a few of my own.

Senator SIMPSON [presiding]. Thank you, George, for assisting me here. I am very appreciative.

I do have questions. Let me submit those to you in writing, Mr. Levenson and Mr. Kennedy. I will appreciate your response. The questions have to do with the issue of standardization, not only for nuclear steam supply systems but also for the balance of the plant issues, and I am very interested in that, especially from your standpoint as architect-engineers, improving your quality assurance, which all of us are very interested in, and the backfitting issue. And I will submit those. They are questions I really want to ask, and just simply because I am deferring to writing does not mean I won't deeply look forward to your thoughts on them.

Mr. LEVENSON. Mr. Chairman, might I just add one comment. There was discussion earlier of advanced designs, and we are also, working on advanced designs, but I detect a little misperception in that the major motivation for advanced designs is to reduce the cost without decreasing reliability or availability. The matter of major advances in public safety is not involved in these advanced designs. We think the present generation of light water nuclear powerplants are perfectly safe and our motivation is really cost and reliability. Thank you.

Senator SIMPSON. Thank you.

Senator MITCHELL. I will have several questions in writing to submit to you gentlemen and to the prior witnesses, to whom I apologize for not being able to be here. But in view of the time constraints the chairman has outlined, we will look forward to getting those in writing.

Senator SIMPSON. Thank you.

The final panelist, Mr. Lawrence Hobart, deputy executive director of the American Public Power Association.

Please proceed.

STATEMENT OF LAWRENCE S. HOBART, DEPUTY EXECUTIVE DIRECTOR, AMERICAN PUBLIC POWER ASSOCIATION

Mr. HOBART. Thank you, Mr. Chairman. I realize the time constraints under which you are operating, and I will make my statement very brief. I understand that the entire statement will be included in the hearing record.

Senator SIMPSON. Without objection, it will be.

Mr. HOBART. Let me make three points that I believe have not been touched upon by previous witnesses. First, both of the bills before you rely on State and local governmental units to make the determination of need for power in licensing proceedings at NRC. And while our association is strongly supportive of that position, we would point out one difficulty we have encountered in our operations in the past, that is, the action of a single State with respect to a nuclear powerplant may retard the ability of an entire region to realize the benefits of that specific project, and we think that is a fact that ought to be taken into account in the legislation.

Second, I think it is important to point out a rather obvious fact, and to indicate what the implication of that fact may be. There are only a few sites in the United States that are suitable for location of a nuclear powerplant and those sites are in scarce supply. Therefore, it is necessary to consider the implications of early site permits, and the possibility that there might be both multiple applications for particular sites or there might be a desire on the part of a number of utilities—not a single utility—or utility group to use the site. For that reason, we are pleased to see that the DOE draft legislation includes the application of anticipatory antitrust review provisions of the Atomic Energy Act through the permit process in the selection and authorization of sites which might be banked and used in the future by electric utilities.

Third, we share the concern, as has been expressed by, I believe, all the witnesses, about some of the cost impacts of backfitting. I am not prepared to argue about specific backfitting. That, of course, is a matter of detail and a question that would have to be gone into with the applicants themselves. But I would like to bring to the attention of the committee the fact that backfitting causes problems which have been described by numerous witnesses and imposes costs on consumers. I have attached to my prepared testimony a copy of a letter to the NRC from the Sacramento Municipal Utility District which lays out the cost of backfitting in a particular case.

Fourth, and last, I would like to indicate the support of our association for a temporary extension of the temporary operating license authority which has been granted previously to NRC and which will expire in December of 1983. Bill Lee of the Duke Power Co. mentioned a particular plant, the Catawba facility and pointed out there is an interest on the part of municipal and co-op utilities in those particular projects, and that is quite true. Members of our association hold a 75-percent interest in one of those units and a 37.5-percent interest in the support for the entire plant. They have an interest in that plant advancing.

Mr. Chairman, I would be pleased to answer any questions.

Senator SIMPSON. I have just a few questions I would ask.

In your testimony, you point out that in those cases where a particular facility may be serving more than one State, or a facility is located in one State and the electricity is transmitted to another, you would recommend the authority to determine the need for power be retained by the NRC. In the situations where the plant affects a region rather than a single State, would it be possible for some form of regional organization to certify a need for power and thereby reconcile those varying State interests?

Mr. HOBART. That is theoretically possible, but the authority for such a decision does not presently exist. In the past 2 years, there has been considerable discussion of applying a regional regulatory concept to the utility industry. The National Governors' Association has endorsed such a proposition, but there is no legislative proposal before the Congress that would implement it, and my impression is that the attitudes of the various States differ on the merits of the approach. Our association has encouraged the concept of regional planning. In fact, Senator Mitchell, in the New England area we endorsed creation of a regional generation entity which would help supply the needs of all utilities in the area, but that proposal never came to fruition and remains an idea, not a reality.

Senator SIMPSON. If the NRC were to retain the authority to certify need for power in those regional impacts, do these cases represent the exception or the rule? Do you have any rough estimate as to how many of the plants that are currently operating and under construction would fall under the heading of regional in impact?

Mr. HOBART. Mr. Chairman, I couldn't quantify it for you, but over the last decade we have seen a steady growth in the multi-State character of nuclear powerplants. The reason for this is perhaps two-fold. One is that the plants have become steadily larger and an individual utility is frequently incapable of absorbing all of the output within a reasonable period of time. Second, by sharing the use of the nuclear powerplant, several useful things happen. One is that you can more easily gear your share of that plant to your load growth; load growth and calculation of costs have become increasingly dicey, and people do not want to extend themselves too far. Where financial costs of these plants are becoming ever higher, there is a desire to spread the risk and associate more utilities with particular plants.

So the short answer to your question is, I think, this has been a trend which has grown over the last 10 years.

Senator SIMPSON. And I wonder, then, a final question, and I will submit the balance of the questions in writing, what do you see as the key shortcomings of the existing hearing process for nuclear powerplants?

Mr. HOBART. Well, Mr. Chairman, I think that we could echo the comments that have been made by previous witnesses on that score. I hesitate to pick out one single element of the process that is a cause of process problems. It seems to me that the suggestions that are before you to stabilize the process all represent worthwhile propositions for your committee to study. In short, I guess you could sum it up by saying that the situation has become rather ad hoc, it has become rather bureaucratic in its implementation, and it has lost its focus in some respects. I think our main suggestion would be to shove decisions up front and make them before there is a significant commitment of time and talent and financial resources, and before decisions are quite literally, in the case of a larger nuclear powerplant, locked into concrete. Focusing thinking and debate as to the merits of the particular project during these early parts of the project development would help us a great deal in eliminating some of the problems.

Senator SIMPSON. I have no further questions right now.

Senator MITCHELL. I will submit, Mr. Hobart, a series of questions, as I will to all the other witnesses, in writing.

Mr. HOBART. Thank you.

Senator SIMPSON. With that, then, this concludes the hearing. Again, I appreciate the assistance of Senator Mitchell, and more than that his continual participation in this subcommittee activity.

The next hearing will be Thursday. We will continue this type of inquiry. Thank you.

[Whereupon, at 11:50 a.m., the subcommittee recessed, to reconvene Thursday, June 16, 1983.]

[Statements submitted for the record follow:]

STATEMENT OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
TO THE NUCLEAR REGULATION SUBCOMMITTEE
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE
UNITED STATES SENATE

S. 894
Nuclear Licensing and Regulatory Reform Act of 1983

June 14, 1983

Mr. Chairman, my name is Morgan D. Dubrow. I am Senior Staff Engineer of the National Rural Electric Cooperative Association (NRECA). NRECA is a national service organization representing more than 1,000 rural electric systems in 46 states. These systems, mostly all cooperatives, serve more than 25 million consumers in 2600 of the 3100 counties in the United States. Members of NRECA provide electricity to about 75 percent of the land area of this nation. We appreciate this opportunity to submit a statement to this Committee to express our views on licensing of nuclear power plants and to support S. 894.

Currently, it is taking about 12 years to license and construct nuclear power plants. Discussions with responsible officials in the Department of Energy confirm our view that this amount of time could be cut in half through the enactment of new legislation to refine and improve existing licensing procedures. The Administration has repeatedly stated that the time for obtaining licensing of nuclear power plants must be drastically reduced. NRECA commends the President for this position and urges swift action by the Administration and the Congress to achieve this objective.

The Committee is dealing with one of the most crucial issues facing our nation --where and how we are going to obtain the additional electric capacity to sustain a sound economy. Estimates of the North American Electric Reliability Council reveal that with a 3 percent average annual rate of growth, by the year 1991 electric utilities in the United States plan the addition of 157,000 MW of which 66,000 MW is nuclear capacity now under construction.

Electric requirements will have to depend primarily on construction of additional coal and nuclear power plants. Presently, some 81 licensed nuclear power reactors are supplying over 10 percent of the nation's electric generating capability, the oil equivalent of 1 1/2 to 1 3/4 million barrels per day. Each new large reactor in commercial service will additionally offset the equivalent of 30,000 barrels of oil per day. When the nuclear power plants currently under construction or on order are completed, these plants together with the plants in operation can provide the energy equivalent of 3.0 to 3.5 million barrels of oil per day. To achieve these benefits, however, it will be necessary to reaffirm the national policy in support of nuclear power and remove the regulatory uncertainties and delays now experienced by the utility industry.

As of March 1983, generation and transmission cooperatives will have invested approximately $4.4 billion covering cooperative ownership of 2074 MW of nuclear capacity. Projects in progress at that time involved cooperative ownership of an additional 1342 MW of capacity with an estimated investment of another $4.1 billion. Therefore, our cooperatives have pledged some $8.5 billion for approximately 3416 MW of nuclear capacity. The nuclear capacity covered by loans or by loan guarantees was over 15 percent of the total generating capacity funded by the Rural Electrification Administration.

NRECA is actively participating in the utility industry's efforts to assure the safety of nuclear power. The Nuclear Safety Analysis Center (NSAC) and the Institute of Nuclear Power Operations (INPO) have been established to improve the safety of nuclear power plants through improved safety analysis, plant design, operating procedures and personnel training. A nuclear energy insurance firm has been established to ease the financial strain which an incident like Three Mile Island can impose on a utility and its customers. We believe that the work accomplished will improve the future safety of nuclear power reactors.

We share the views of the American Nuclear Energy Council and the Edison Electric Institute expressed by Mr. William S. Lee that "the Nuclear Regulatory

Commission licensing and regulatory process must be updated, or it will bar the continued use of nuclear power in this nation".

Licensing delays and the attendant stretchouts of construction, combined with inflation and reduced power demands, have led to greatly increased cost. Our generation and transmission cooperatives will pay $8.5 billion, an increase of $2 billion from the previous $6.5 billion for some 3400 MW which is a little over one-half of the nuclear capacity contracted for by our generation and transmission cooperatives three years ago.

We recognize, of course, that this is not wholly attributed to licensing delays, but these delays are a large part of the problem. In addition to the rate increases experienced by member systems of G&Ts with an interest in nuclear power plants jointly owned, there are some 300 additional rural electric cooperatives that purchase power from other utilities with nuclear power plants that have experienced licensing delays. This of course is reflected in the higher rates paid by consumer members of those cooperatives.

NRECA fully supports nuclear power as shown by the attached resolutions which were unanimously approved on February 3, 1983 by our members at the 41st annual meeting in San Francisco. These resolutions deal with:

- Government Support for a Revitalized Nuclear Program
- Government Nuclear Information Program
- Overregulation Strangulation
- Atomic Energy
- Nuclear Liability Insurance
- Accountability and Financing of Intervenor Groups
- Priorities for Federal Energy Related Research
- Pacific Northwest Power Supply
- The Breeder Reactor and Nuclear Energy Research
- Participation in TMI Restart Suit

We believe licensing and regulatory reform legislation must contain the following elements to eliminate the problems which have been identified in the current process:

1. Require the National Regulatory Commission to analyze any proposed new or modified regulatory requirement to determine if, on the basis of impact on overall plant safety and the resources required, such requirement is justified.
2. Mandate the use of hybrid procedures for public hearings to replace current adjudicatory hearings.
3. Provide for issuance of a combined construction permit and operating license in a one-step licensing proceeding for future applications.
4. Authorize approval of standard plant designs and direct the National Regulatory Commission to establish procedures to encourage such standardization.
5. Provide for pre-approval of sites, separate from a facility application.
6. Provide for early public participation in the decisionmaking process.

In closing, we again voice our full support for the Administration's proposed bill, S. 894, the Nuclear Licensing and Regulatory Reform Act of 1983.

Thank you for the opportunity to express our views.

Attachment

Government Support for a Revitalized Nuclear Program

The availability of adequate amounts of power and energy is vital to the future growth and security of our nation as a leader of the Free World. As a direct result of uncertainty, indecision and deliberate delay on the part of the federal government, our nation faces the long-term prospect of energy shortages, declining productivity, inflation and increasing inability to compete in the international marketplace, resulting in growing unemployment and potential civil unrest.

Any honest and realistic examination of the power outlook in America today clearly indicates that if the nation is to deal effectively with these growing energy-related problems, nuclear power must play a significant role for the foreseeable future.

Because of the decline in the planning, construction and the cancellation of nuclear power plants, this country will necessarily have to place an ever growing reliance on coal — a nonrenewable resource — as its primary source of fuel for the generation of electricity.

We feel that such a trend is contrary to our nation's best interest and a balanced program using new coal and nuclear plants would be far more economical and both environmentally and politically acceptable.

We, therefore, recommend that the federal government set policy, and both the Administration and the Congress provide leadership and support for an aggressive nuclear program. It is of vital importance that positive action be taken to:

1. Allay the fears of the American people regarding radiation exposure and physical destruction of property from nuclear plant accidents by stressing the work of the Institute of Nuclear Power Operation (INPO) whose functions are to insure excellence in the safe design, construction and operation of nuclear power plants.

2. Encourage the nuclear industry to plan and construct nuclear power plants.

3. Simplify and shorten the nuclear licensing procedures, encouraging the issuance of needed limited work authorizations, construction permits and operating licenses on a timely basis.

GOVERNMENT NUCLEAR INFORMATION PROGRAM—The American public is concerned and confused by the wide variety of opinions and alleged "facts" presented on nuclear power from hundreds of sources. There is no single recognized creditable source of such information which members of the public and the Congress can use with confidence, or which will be universally accepted. Such misinformation about nuclear power has been disseminated without challenge. The result could be disastrous to our nation's National Energy Policy.

Rural electric cooperatives believe that the American public should be confronted with the true facts about nuclear power and we believe that it is the responsibility of the federal government to see that proper and accurate information based on scientific research and analysis is widely disseminated.

We propose that Congress take immediate steps to formulate a program and budget (similar to the Conservation and Solar Information Program) to properly inform the public about nuclear power and challenge misinformation.(J-1981)

OVER-REGULATION STRANGULATION—We recognize the time is long overdue for a legitimate accounting of the impact of government over-regulation, the large amount of resources devoted to these activities, the adverse effects that over-regulation has [illegible] the cost of living, employment productivity, capital formation and scientific progress.

The growth of over-regulation is the summation of thousands of small, sometimes conflicting actions, which in their totality become more and more insidious, pervasive, and expensive to the American consumer.

None of the regulatory agencies were established for the purpose of raising the price of consumer goods, strangling businesses, forcing firms out of business, altering international trade relationships or creating unemployment in whole industries; however, all have occurred as a result of the over-regulation.

We call on the President of the United States and the leadership of Congress to implement immediate action to streamline regulatory procedures and to limit the authority of federal agencies to issue rules and regulations which strangle private initiative to expand and improve our production capabilities—including the consumer-owned rural electric systems of our nation.

ATOMIC ENERGY—The Congress has amended the Atomic Energy Act of 1954 to require that the Nuclear Regulatory Commission (NRC), prior to issuing a license for the construction of any nuclear power plant, investigate the antitrust implications of said plant and obtain from the Attorney General of the U.S. his opinions as to whether operation of the proposed facility is likely to violate any antitrust law.

The Congress has further amended the 1954 act to empower the NRC to deny a license for any such plant which it deems will so violate the antitrust laws, or to condition its licensing on implementation by the applicant of measures designed to avoid such violations.

We express appreciation to Congress for these changes in the law, and urge the NRC and the Department of Justice to continue exercising a high order of vigilance in these matters, and to vigorously apply and enforce the antitrust provisions of the nuclear power plant licensing law so that small electric systems are assured of their rightful share of benefits attributable to nuclear power stations.

We oppose any change in the Atomic Energy Act of 1954, as amended, which would dilute the antitrust protection afforded thereunder to small electric systems.

NUCLEAR LIABILITY INSURANCE—We express appreciation to the Congress for extending the Price-Anderson Act for 10 years—until after 1987. This action will continue to encourage development of nuclear power plants by assuring availability of sufficient funds to satisfy potentially large damage claims.

We respectfully request that Congress carefully examine any amendments to the Act which may be proposed in the future, and reject proposed amendments which would adversely affect the Act and the purposes it is designed to achieve.

Any court challenges to the legality of the Price-Anderson Act shall be opposed by NRECA.

ACCOUNTABILITY AND FINANCING OF INTERVENOR GROUPS—It has been the experience of the electric utility industry that numerous individuals and groups initiate litigation or intervene in administrative proceedings on the basis of alleged adverse environmental, health, safety, socio-economic or other impact resulting from the siting or construction of power facilities.

We would not deny any individual or group the right to express its views on such subjects, but we feel that the increased capital costs of these facilities, which result because of litigation expenses, delays, etc., should not be borne by the cooperatives' member-consumers unless the allegations are upheld by the administrative or judicial tribunal.

To make the citizen suit process responsible and balanced, we respectfully urge Congress to enact legislation that would authorize (a) the court to award attorney fees as well as court costs; and (b) to authorize the court to award exemplary damages when the suit is found to be frivolous or not based upon a good faith belief that there has been a substantial violation prompting the bringing of the action.

We urge NRECA to oppose any legislation which would require government agencies to provide funds to finance so-called public interest groups which oppose projects requiring federal assistance or federal approval. We believe that there now exist adequate administrative procedures within various federal agencies to protect the public interest.

Priorities for Federal Energy Related Research

To meet America's future energy needs, we must develop every practicable energy source that shows promise of becoming feasible and environmentally acceptable through technological research and development.

Among projects that need adequate funding are: electric field effects; basic transmission and distribution systems research; superconducting technology application; systems control and analysis; and advanced electric energy (battery) storage.

Other technologies which show potential for commercialization and which deserve continued or increased funding and support by the federal government include the following:

- Fuel cell research and development;
- Gas cooled and fast-breeder reactors;
- Small-scale hydro;
- Geothermal (including co-op initiated projects such as the Raft River Geothermal Project, and other such projects in the Texas/New Mexico area);
- Peat, lignite and coal technologies (including gasification, liquefaction, fluidized bed combustion and MHD);
- Energy management and storage technologies (including compressed air, underground pumped hydro and battery storage);
- Solar energy systems (including residential heating and cooling, solar thermal, and photovoltaic generation of power); and
- More efficient small-and medium-scale power generation systems which can utilize coal and/or waste products and which can be used in a cogeneration mode.

We urge that in development and demonstration of each of these technologies special recognition and attention be given to their impact on, and compatibility with, electric utility systems. We further urge the federal government to coordinate these research efforts with EPRI.

Pacific Northwest Power Supply

NRECA urges that the Northwest Power Planning Council and the Bonneville Power Administration take immediate action for acquisition of Washington Public Power Supply System Nuclear Projects Nos. 4 and 5 under the Northwest Power Act.

THE BREEDER REACTOR & NUCLEAR ENERGY RESEARCH—We are deeply concerned by any de-emphasis of nuclear power as a viable power option for the future and the resulting neglect of research and development involving nuclear power in general and the breeder reactor in particular.

There is presently in storage nuclear fuel resources adequate to supply the nation's electric energy requirements for the next century, provided we elect to use the breeder technology. Under present national policy, we are wasting 99.1% of the fuel available for the use in light water reactors. Given the finite limitations on energy available to the world community of nations, we can ill afford the luxury of turning our back on this virtually inexhaustible resource.

We urge the Administration to move expeditiously in reaching the decision, based upon existing research information, to provide the administrative framework within which a viable nuclear technology, including the breeder option, can be developed and re-instituted. Such decisions must address the the need for insuring sufficient fissionable resources and enrichment capacity, providing development of fuel reprocessing facilities, a breeder fuel cycle and a permanent disposal technology for high level wastes. We also urge prompt construction of the Clinch River Liquid Metal Fast Breeder Reactor.

Such action will permit our nation to begin to regain its leadership role in the international nuclear community and will materially lessen our dependence upon foreign energy sources, strengthening our nation both economically and politically.

Participation in TMI Restart Suit

We note with alarm a decision rendered earlier this year in which the United States Court of Appeals for the District of Columbia ruled that before the Nuclear Regulatory Commission permits the undamaged Three Mile Island Unit to restart, NRC must determine whether a new or supplemental environmental impact statement on the psychological health effects of a restart must be prepared. A group called People Against Nuclear Energy (PANE) sued the NRC, claiming that the National Environmental Policy Act (NEPA) requires the consideration of psychological effects of major federal actions. The Appeals Court agreed, thereby establishing a precedent which potentially could require consideration of psychological stress in every environmental impact statement, whether or not it is related to nuclear energy.

Several parties to the Appeals Court suit have petitioned the Supreme Court to review the decision. In view of the major impact this case could have on the environmental assessment process and the additional costs it potentially could impose on rural electric consumers, we urge NRECA to provide all possible support to efforts to reverse this decision, including the filing of a "friend of the court" brief in support of Supreme Court review of the existing ruling.

STATEMENT

OF

WILLIAM S. LEE

My name is William S. Lee. I am Chairman and Chief Executive Officer of Duke Power Company. I appear today on behalf of the Edison Electric Institute, the Atomic Industrial Forum, and the American Nuclear Energy Council. I am accompanied by Barton Z. Cowan, Chairman of the Atomic Industrial Forum's Lawyers Committee and a partner in the law firm of Eckert, Seamans, Cherin and Mellott.

I welcome this opportunity to discuss with you the need to reform the NRC licensing process. Because the basic legislative framework for the licensing process has remained virtually unchanged for more than 20 years, such reform is badly needed. In that time, nuclear technology has matured and its importance as a source of electricity has progressively grown; moreover, the evolution of administrative decisionmaking recognizes that disputed technical issues are amenable to resolution in a less formal hearing process than that used by the NRC. However, during this time there has been increasing instability and unpredictability in nuclear licensing and regulation which has resulted in a growing dissatisfaction with the procedures, timing, and results of NRC decisionmaking. Therefore, we believe the NRC licensing and regulatory process must be updated, or it will bar the continued use of nuclear power in this nation.

My statement today will spell out why I think nuclear power is necessary to meet our expanding need for electricity; how the industry assures that the highest standards are achieved in nuclear plant design, construction and operation; and why and how the licensing and regulatory process must be reformed. I will give an example of how the licensing and regulatory process has affected the Catawba Nuclear Station, a plant owned jointly by Duke and municipal and cooperative utilities, and testify in support of extending the authority given to the NRC in Section 192 of the Atomic Energy Act, as amended by Section 11 of the 1982-83 NRC Authorization Act (Public Law 97-415, 76 Stat. 2067 (1983)), to issue a temporary operating license. Mr. Cowan will present our views on the effectiveness of the specific provisions of S. 893, the NRC bill, and S. 894, the DOE bill, in accomplishing the needed changes.

The Importance of Electricity to the National Economy

Economic growth in the United States as well as other industrialized societies is directly linked to the ability to supply electricity. Every increase in our Gross National Product (GNP) has been accompanied by a slightly larger increase in our electric power demand. Therefore a return to healthy economic growth will result in a growing demand for electricity. The GNP has grown 18% since 1973 and the demand for electricity has increased 23% during the same period. Similarly, between 1981 and 1982 the GNP dropped 1.8% and electric power demand dropped 1.3%. Though in the last 10 years the demand for electricity has been lower than in earlier decades, it has been the only form of energy for which demand has grown at all, and its growth is linked directly with the growth in GNP. The connection between electricity and economic growth is a result of the steady shift, in all segments of our economy, from the direct burning of oil and gas to the use of electric power. While industrial use of energy in general declined 18% in the past decade, the use of electric power in industry increased 10%.

New electric power capacity must be scheduled years in advance of its need. A major coal plant must be planned eight years in advance; a nuclear plant, 12 or more years. This means that a utility must make substantial commitments (which in today's climate can amount to billions of dollars) before the demand for the additional electricity actually exists. If new capacity is available too early, electricity users will have to pay for excess capacity for a period of time; however, if it is not available when needed, the economic health of the region could be affected for years as a shortage of affordable electricity places a ceiling on the area's economic growth.

For the past several years electric utilities have generally not been ordering new plants of any type. In fact, utilities have tended to cancel previously-scheduled capacity additions as reduced growth in electric power demand has in some cases presented a potential for excess capacity. With a return to a healthy economic growth rate, however, any cushion which appears now to exist could vanish in a few years, and utilities in rapidly growing areas could well begin ordering new capacity in significant amounts by the mid-1980s. An economic growth rate of 3% a year, for example, could lead to a growth in electricity use by about 3% a year, which would mean a doubling of our national demand in only about 25 years.

Last year nuclear power plants generated 12.6% of the nation's electricity. By the early 1990s nuclear generation will account for about 24% of our domestic electrical energy requirements. Thus, it is clear that nuclear power is already a vital and growing part of our electric supply system. However, beyond those plants now under construction there are no plans for additional nuclear plants.

As the American appetite for electricity continues to grow, where will the additional power come from? No long-term national policy can be founded on an increased dependence on oil to generate electricity. Conservation, proper load growth management, solar, geothermal and hyroelectric sources will contribute to some extent, but cannot meet the demand. The fact is that for the long-term future there are only two fuels available in the amounts which will be required to meet electric demands -- coal and uranium. It is not desirable public policy to depend exclusively on either fuel.

Because of its central role in powering industry, economic growth and employment, the adequacy of electric power is now of strategic importance to the American economy and our nation's security. National energy policy must recognize the role which uranium, along with coal, has to play in assuring an adequate supply of electricity, and we need to remove the impediments to achieving that objective.

The Industry's Responsibility For Safety

We can all agree that the first objective of a sound nuclear power program is to assure adequate safety. The industry has traditionally recognized that the primary responsibility for the safe construction and operation of nuclear power plants rests first with the individual utility, and then with the industry as a whole. The NRC is required by law to set the ground rules. However, its regulatory function is necessarily limited to an oversight of the construction and operation of licensed facilities. I might add that this relationship was recognized in the Kemeny Commission report on Three Mile

Island, and that it must be kept in mind in the current effort to reform the NRC regulatory process.

Traditionally, individual utilities, and the industry as a whole, have worked with the NRC both to solve individual problems and to develop standards covering plant design, construction and operation. These efforts on behalf of the industry were undertaken by associations such as the Atomic Industrial Forum and the Edison Electric Institute, as well as the various owners' groups, to resolve outstanding technical and regulatory issues. Support was provided for the development of needed technical standards by professional organizations such as the Electric Power Research Institute, the American Nuclear Society, the American Society of Mechanical Engineers, the American Nuclear Standards Institute and the Institute of Electrical and Electronic Engineers.

The accident at Three Mile Island (TMI) emphasized the enormous incentives which the nuclear industry has for maintaining the safe and reliable operation of nuclear facilities. TMI reinforced the utility industry's commitment to safety and identified the need for a more formal institutionalized role by the industry in self-regulation. The industry has taken steps to put into place new and stronger institutional arrangements, improved liaison with its regulators, and improved communications and cooperation within the industry to disseminate operating data among all operators. Perhaps most important, there is a reinforced commitment by the industry to take all steps necessary to assure that nuclear power will remain a safe and efficient source of electricity.

In addition to the continuing, and in some cases increased, industry participation as outlined above, perhaps the most significant industry undertaking since the Three Mile Island accident is the establishment of the Institute of Nuclear Power Operations (INPO). Established in 1979, INPO today is a 350-person, $35 million-a-year organization of engineers, scientists and specialists whose job is to establish "benchmarks for excellence." Since its inception, INPO teams have evaluated performance at all operating nuclear power plants and, where required, made recommendations for improvements. INPO has also established training program accreditation and scholarship programs, and, most recently, initiated a program to improve the quality of nuclear power plant design and construction. INPO's success is demonstrated by the fact that 13 foreign nations have now joined its ranks. As an example of the institutional nature of INPO's work, you may recall that, prior to TMI, there was no system for a timely sharing of operating experiences among operators of nuclear plants. INPO has established a national system of telecommunications connecting every nuclear utility so that experiences and significant events at any plant can be immediately shared with all.

All of these efforts reflect the industry view that the primary responsibility for the safe and reliable construction and operation of nuclear plants remains with the utility, and that discharge of this responsibility is enhanced through the self-evaluation and self-regulation approaches outlined above. As the industry continues to demonstrate the effectiveness of this course, it is imperative that government policies and programs be redirected to encourage it. In addition, the NRC, in exercising its mandated oversight responsibilities, should reexamine its licensing and regulatory programs to establish a less prescriptive role, thus enabling licensees better to achieve the objective of improved safe and reliable construction and operation of nuclear plants.

Objectives of Licensing and Regulatory Reform

From mid-1974 to the present, the time from planning to operation of a nuclear power plant increased by approximately 70%. A major component of this schedule escalation, and the consequent increased costs, is the instability of the NRC's regulatory requirements. Because of the unpredictability created by this instability, it is difficult to know when capacity will be available to match demand, thus rational planning is severely affected. Moreover, constantly changing regulatory requirements, which may not enhance safety, often result in extensive backfits both to plants under construction and in operation, thus delaying construction schedules and causing extensive down time. Substantial change in the NRC process is necessary to assure the cost-efficient and continued safe operation of existing plants, to facilitate the completion of plants currently under construction, and to retain nuclear power as an option for meeting future electricity demands. The safety record of nuclear power is a good one. A careful examination of the licensing and regulatory system, however, provides ample evidence that it evolved, and continues to evolve, in a largely undisciplined manner. This is inconsistent with the large and still growing number of nuclear power plants. Therefore the primary objective of regulatory reform should be, consistent with the health and safety of the public, to eliminate the inefficiencies in the current process. Such action will assure the continued safety of the public.

So far as licensing and regulation are concerned, the nation's highest priorities are:

- to continue to maintain the highest standards for protection of the public health and safety;
- to assure that the public will continue to benefit from the continued safe operation of the nuclear plants now in operation;
- to facilitate the completion of plants currently under construction;
- to stabilize the regulatory process;
- to establish an improved, predictable, and stable licensing process for any plants ordered in the future.

Today, nuclear power is not a future option available to utilities. A primary reason is the lengthy and unpredictable NRC licensing and regulatory process. Because of this process, new nuclear capacity must be planned and scheduled 12 years in advance of its need. This extends the planning horizon beyond the period in which demand can be predicted with a reasonable degree of accuracy.

The current licensing process leaves fundamental issues open for reconsideration at the operating license stage, including whether the previously approved design is appropriate. It also subjects the utility to a myriad of changed and changing regulatory requirements during construction. The resulting constant shifts in scheduled completion dates require repeated trips to the financial markets to raise capital funds, often at terms which are less than optimum. The uncertainty and unpredictability which this creates make it difficult for a utility, before it makes the substantial financial commitment required, to determine when a plant will operate.

Moreover, once a plant is licensed to operate, the current regulatory system can actually impede optimization of safety, as it does not require systematic analysis by the NRC of a new or modified regulatory requirement to determine if it is needed or cost effective on the basis of its impact on overall plant safety. Regulatory requirements are constantly imposed, and changed, without consideration of their impact on overall plant safety. The resulting backfitting of operating plants, which has now become routine, often diverts NRC and industry resources away from higher priority safety-related work. Requiring the NRC to perform such an analysis would assure that only those measures which enhance safe and cost-efficient operation are adopted. It should be noted that the NRC has instituted a number of internal reforms to improve its control over the imposition of new regulatory requirements, such as the establishment of the Committee to Review Generic Requirements (CRGR). CRGR's work has been most salutary. However, this sort of ad hoc approach to regulatory affairs cannot substitute for the systematic analysis of all new regulatory requirements which we propose.

The principal benefit of improving the NRC's hearing and regulatory process is in the enhancement of public safety which will result from a more rational and systematic approach to licensing and regulation. Operating plants will operate more safely and reliably because it will be assured that only those new or modified regulatory requirements which effectively enhance safety are required. The encouragement of standardized plant designs will benefit safety by concentrating the resources of designers, engineers and vendors on a few improved designs. This will stimulate improved construction practices, including improved construction quality assurance. Training of operating personnel will be facilitated. Improved standard designs will also enchance plant maintenance and operating practices and make possible more effective and efficient inspections. Separate site approval will permit decisions to be made without the pressure of time which accompanies the present process, and before large financial commitments are made.

While enhancing safety, licensing and regulatory reform will also result in other substantial benefits. Public participation in the process will be enhanced by providing for public input earlier in the proceedings and in a more comprehensive and meaningful fashion. Environmental considerations, as well as consideration of alternative means of generation, will be enhanced by providing more appropriate decisionmaking points for their consideration than is now the case. Consumers will benefit from the reduced capital costs of nuclear power plants, avoidance of costs associated with unnecessary backfits, and from the economies associated with improved on-line performance and reliability.

Cost and Schedule Impacts

Unstable NRC requirements contribute significantly to increasing costs of nuclear power plant design, construction and operation. Some of these changes may enhance safety; however, as discussed above, there is no systematic evaluation by the NRC of the costs and benefits, or the impact on overall safety, of any given change. In addition, the sheer enormity of the changes are placing a severe strain on the industry's manpower and financial resources to respond.

In an effort to understand the cost and schedule impacts of NRC regulation, last summer the Edison Electric Institute conducted a survey of nuclear plant operators. While it is not possible precisely to distinguish and quantify costs and delays caused by the regulatory process, as opposed to other reasons, the overall results of the survey suggest that the costs of regulatory changes for plants which have received licenses since 1970, or will soon receive a license, run to tens of billions of dollars.

The EEI survey shows that owners of 41 nuclear units that received operating licenses between January 1970 and December 1978 estimate that their total backfitting costs, after receiving their operating licenses, exceed $3 billion dollars, which is about 25 percent of the initial costs of these plants. Approximately $1 billion of these costs can be attributed to utility initiated backfits to improve operability and maintainability, $1.5 billion to NRC backfits not related to the TMI-2 accident, and $0.5 billion to NRC required backfits on TMI lessons learned. An additional $1 billion in backfits has been projected over the next few years to satisfy existing or expected NRC requirements. I do not suggest that the backfits are unjustified. Indeed, the fact that $1 billion of the backfits were utility initiated clearly shows that utilities recognize the appropriateness of plant improvement when new information warrants it. What the breakdown does show is that NRC imposed backfits constitute a significant portion of the facilities' overall costs. The imposition of billions of dollars' worth of changes, ultimately paid for by the same public whose interests are the professed object of the backfits, certainly warrants a systematic, analytical consideration of safety benefits.

As one example, the Oconee Power Station of Duke Power Company consists of three PWR nuclear units with a combined capacity of 2661 MWe. Commercial operation of the first unit was July 16, 1973, the second unit was September 9, 1974, and the third unit was December 16, 1974. Total cost of the units was $493 million, equivalent to $185 per KW. Backfitting costs for the three Oconee units through June 30, 1982 have been $179 million. These costs can be allocated as $142.2 million for NRC imposed backfitting other than TMI-related, $21.4 million for TMI lessons learned backfitting; and $15.2 million for utility initiated backfitting. An additional backfitting cost of $121 million is anticipated for the Oconee units to satisfy the existing and projected requirements of the NRC.

The NRC has made attempts in the past to estimate the costs for specific backfits. However, those costs are sometimes not accurate. For example, Northeast Utilities selected certain requirements from NRC's TMI Action Plan (NUREG-0660) and compared the NRC's cost estimates to the actual capital costs for implementing those requirements at its Haddam Neck Plant. The installation of Reactor Vessel Head Vents was estimated by the NRC to cost $100,000; in actuality it cost $1,102,000. System Integrity Review was estimated to cost $5,000 per plant by NRC; in actuality it cost $1,144,000. By contrast, the NRC estimated that a Plant Shielding Review would cost $50,000; instead it cost $6,000. Northeast Utilities concluded: "[H]ad the NRC performed realistic Value-Impact Analysis on recent TMI Action Plan requirements and properly weighed cost against benefit, a number of requirements would not be justified in terms of increased plant safety." These examples do not instill confidence that all of the billions of dollars spent on backfitting to improve safety have been spent to the best advantage.

EEI has examined the cost and schedule increases experienced by plants currently coming on line as compared to earlier units. The cost of units surveyed by EEI increased from an average of $169 per KWe in the 1970-72 period, to an anticipated range of $587 to $3,062 per KW for 23 units coming on line between January 1980 and December 1983. The total cost estimate of the 23 plants when they received their construction permits was $11.6 million. The estimate of last summer had increased to $3[illegible].5 billion, an increase greater than a factor of three. These numbers show cost increases far beyond the impact of normal inflation and escalation. An examination of construction times showed that the normalized average period between construction permit and operating licenses increased from an average of 80 months per 1000 MWe in 1970-72 to an average of 103 months per 1000 MWe for the 23 surveyed plants coming on line between January 1980 and December 1983.

A comparison of costs and time to construct the Zion and Byron power stations illustrates the impact of the unstable regulatory environment. Each station has two pressurized water reactors of about the same size, from the same manufacturer, were designed by the same architect-engineer and were constructed by the same contractor. Zion cost $582 million, took 52 months to construction, and began commercial operation in October 1973. Byron is estimated to cost $2,764 million, take 92 months to construct, and begin commercial operation in February 1984. While inflation and the high interest rates are contributing factors, the utility estimated that about 60 percent of the cost increase is the result of NRC regulatory changes. A comparison of the costs of the Oconee, McGuire and Catawba stations of Duke Power Company shows a similar result. All these stations are pressurized water reactors, designed and constructed by Duke Power Company. The costs of Oconee may be used as a benchmark for comparison of the regulatory cost impact on the later units. Practically all the materials were purchased and most of the labor performed for Oconee before 1974. Thus, conservatively, the actual Oconee station cost of $185 per KW can be taken to represent 1973 dollars. By using the Bureau of Labor Statistics inflation factors and adjusting the number to account for three units at the Oconee station, the 1982 value of an equivalent Oconee plant cost would be about $445 per KW for a two unit plant. Since a primary difference between 1973 and 1982 other than inflation is the regulatory environment, a majority of the additional costs for the McGuire and Catawba stations may be assigned as a regulatory impact. While a portion of the added costs are the results of changes desired by the utility, it is conservatively estimated that at least 60 percent of the increase is the result of NRC regulatory changes. The additional cost in 1982 dollars for the McGuire Station is $1,893 million and for the Catawba Station is $2,345 million. A 60 percent regulatory impact is $1,136 million for McGuire and $1,407 million for Catawba. This added regulatory impact on McGuire and Catawba is about 40 percent of the total station 1982 equivalent value.

There is little doubt that the unpredictability of NRC actions and regulatory changes were major contributors to the increases experienced at all of the plants now coming on line. And, since there has never been an identified acceptable regulatory safety goal and no measurable basis of safety or cost/benefit analysis provided for the many regulatory changes, the true safety value of what we have bought for our plants is unknown. Safety must be provided, but safety is ill-served by the instability of the licensing and regulatory processes.

An example of the unwieldy nature of the NRC's licensing and regulatory process can be seen by examining the NRC's licensing proceeding for the Catawba Nuclear Station. Catawba is owned by Duke Power Company and a number of municipal and cooperative utilities. I propose to discuss this proceeding today not only to illustrate the problems arising from the NRC's cumbersome licensing and regulatory process, but also to urge legislation which would extend the authority of the NRC to issue a temporary operating license (TOL). That authority, currently embodied in Section 192 of the Atomic Energy Act, as amended by Section 11 of the 1982-83 Authorization Act (Public Law 97-415, 76 Stat. 2067 1983)), expires December 31, 1983.

The NRC was given authority to issue a TOL to assure that operation of a nuclear power plant would not be delayed because of diversion of NRC staff resources from licensing review work to post-TMI safety reevaluations. The pace of the NRC's licensing proceeding for Catawba makes it distinctly possible that Catawba might be restricted to operation at a 5% power level, though it may be ready to operate at full power, pending issuance of a decision by the Atomic Safety and Licensing Board which would authorize full power operation. This situation is a direct result of the NRC's response to the TMI accident and of our success in building Catawba ahead of schedule. Attached to this statement is a table which provides a chronology of significant events in the Catawba licensing proceeding now pending before the NRC.

We filed an application for an operating license for Catawba on March 26, 1979. Within a matter of days, the accident at TMI occurred, following which, as you know, the NRC essentially stopped review of licensing applications and focused the attention of its staff on post-TMI safety reevaluations. The end result was a de facto moratorium on any review of any licensing application, or issuance of any license, for a period of time. As a result of this moratorium, and the myriad of new requirements which emanated from the NRC, we were required to revise substantially the application and to refile it with the NRC two years later, in March of 1981.

As the attached table shows, we have been engaged in the pre-hearing process for Catawba for two years. (The notice of opportunity for hearing was published in June of 1981). Presently, the evidentiary hearing itself is not scheduled to begin until October of this year, well over two years after the notice of hearing was first published. If issues are raised regarding the just-filed state and local emergency plans, the hearing on those matters is not likely to start before 1984.

Meantime, we have been successful in building Catawba ahead of schedule. We once thought fuel loading would be in October 1984. Based on our progress so far, it appears we will be ready to load fuel in May 1984, and all parties to the proceeding know this. If we continue to improve upon our schedule targets at our demonstrated pace, we could be ready as early as February 1984. We do not know that we could accomplish this, but it is possible.

Given the current hearing schedule, it appears that a decision authorizing issuance of a full power operating license for Catawba may not be forthcoming from the Licensing Board before the summer of 1984. If that is the case, then based on our current construction expectations there is a good chance that licensing delays may prevent timely full power operation of Catawba. I must say that in my experience, contested hearings always drag out longer than I had expected.

The Catawba Licensing Board has recognized this possibility, stating (after it learned that we had advanced the full load date to May, 1984) that:

> It may not be possible fully to accommodate a substantial acceleration of the completion date which comes, as this one does, well into the hearing process. Given the number of uncertain variables, we cannot predict now whether this case can be completed by May, 1984, assuming that date holds firm. We note, however, that the most significant (and presently unknown) factors in that regard are the number and complexity of off-site emergency planning contentions. Duke Power Company, et al. (Catawba Nuclear Station, Units 1 and 2) Memorandum and Order (Denying Motion for Reconsideration or Referral and Establishing Schedule), February 2, 1983.

Although NRC regulations authorize operations up to 5% power levels without NRC or FEMA finding concerning off-site emergency preparedness (10 CFR Section 50.47(d)), it appears that it is NRC practice to interpret the regulation to restrict higher power levels until NRC and FEMA findings are made, and, if in controversy before a Licensing Board, approved by that Licensing Board. 10 CFR Section 50.47(a), (b); Southern California Edison Co., et al. (San Onofre Nuclear Generating Station, Units 2 and 3), LBP-82-3, 15 NRC 61 (1982). Assuming that our construction expectations can be met, and fuel loading does occur as early as February, we could be ready to go above 5% power as early as May, with the hearing process still underway. Therefore, it appears to us that we may wish to file an application for a TOL for Catawba. We believe that Catawba meets all the requirements set forth in the legislation.

First, the situation with respect to Catawba's licensing status is a direct outgrowth of the TMI accident. As I noted earlier, and as the attached chronology shows, we were forced to refile our application for an operating license some two years after its original submittal. This refiling was occasioned by the need to revise the original submittal to reflect the implementation of NRC post-TMI requirements. These requirements necessitated a slippage in our construction schedule, and a commensurate slippage in NRC review. As a result of that slippage, the NRC licensing documents were not published until January - May 1983. Using past experience as a guide, I know of no contested NRC proceeding that has been completed, such that a final decision is issued, within six months to one year from publication of the NRC licensing documents. Therefore, even where we deal only with the issues now before us, it is problematical whether we would complete the process in a timely fashion. The pending potential emergency plan issues only exacerbate that situation.

Second, all the documents necessary to the filing of an application for a TOL are now available. As the chronology shows, the report of the Advisory Committee on Reactor Safeguards (ACRS letter), the NRC Staff's Safety Evaluation Report (SER) and its Supplement responding to the ACRS letter, the NRC Staff's Final Environmental Statement, and the state, local, and utility emergency plans are all now available.

Third, we believe that the Commission will be able to find, as required by Section 192b(3), that denial of a temporary operating license would result in a delay between the date Catawba is sufficiently completed to receive a TOL and the date when Catawba would otherwise receive a final full power operating license under the requirements of the Act.

As you know, the authority of the NRC to issue a TOL expires on December 31, 1983. At that time, the Catawba plant will not be ready to load fuel. Should the December 31, 1983 date be extended, then we will be assured that, if necessary, the option of a TOL will be open to the NRC so that licensing authority will not be a bar to operation of Catawba. I should mention that it is my understanding that a majority of the NRC Commissioners support such an extension because, among other reasons, of the uncertainty of the hearing process, and have so testified before this Subcommittee.

Further, it appears to me that Duke (and its co-owners) is not the only utility in need of such an extension. I am attaching to this statement a list of 12 nuclear plants, including Catawba, scheduled for completion in late 1983 or in 1984. The licensing proceedings for all these plants are contested, and are now pending before a Licensing Board. Though I do not know the details for each such proceeding, it does not seem unreasonable to assume that at least some of these plants are, or will be, in a status similar to Catawba.

Let me end this discussion by saying that I firmly believe that it is in the public interest that the NRC's authority to issue a TOL be extended so that, if necessary, the NRC, and the industry, have the TOL option available.

How Licensing and Regulatory Reform Can Best Be Accomplished

The objective of assuring the safety and affordability of nuclear power can be achieved in a more effective and efficient way than is currently the case. That way is defined in the two reform measures now before you, which makes clear that there is a consensus between NRC and DOE that the current process is deficient and must be reformed. There is also a consensus as to the elements needing reform, although in some respects there are differences in approach. Nevertheless, the two bills provide a good starting point for fashioning reasonable remedies.

Let me at this point set out the elements which I believe need to be included in a licensing reform measure. I will then summarize in a general fashion how each of the bills treat those elements, and as I said earlier, Mr. Cowan will provide a more detailed analysis.

Licensing and regulatory reform legislation must contain the following elements in order to eliminate the problems which have been identified in the current process:

1. Require the NRC to analyze any proposed new or modified regulatory requirement to determine if, on the basis of impact on overall plant safety and the resources required, such requirement is justified.
2. Mandate the use of hybrid procedures for public hearings to replace current adjudicatory hearings.
3. Provide for issuance of a combined construction permit and operating license in a one-step licensing proceeding, for future applications. This will assure that once construction is completed, the

plant can commence operation without being subject to a second public hearing.

4. Authorize approval of standard plant designs and direct NRC to establish procedures to encourage such standardization.
5. Provide for pre-approval of sites, separate from a facility application.
6. Provide for early public participation in the decisionmaking process.

Both NRC and DOE are in substantial agreement on the underlying rationale for reforming the process and on what the objectives of that reform should be. However, the findings and purposes section of the NRC bill better emphasize several key provisions, such as the need to : encourage standardization of designs; preclude the relitigation of issues previously litigated; limit the use of adjudicatory procedures; and recognize that the NRC process should provide greater regulatory stability. It is hoped that these findings and purposes would be included in any legislation enacted by the Congress.

There are differences in the approaches taken to backfitting by NRC and DOE. Essentially, DOE incorporates in its bill specific standards which NRC must use in analyzing proposed new or modified regulatory requirements. In contrast, the NRC bill would leave the matter to administrative action. What is involved here is a difference in approach, rather than substance. The industry agrees that NRC has the authority to promulgate a new backfitting rule and encourages it to do so promptly. However, the industry strongly believes that such a rule needs to be specifically supported and reinforced through legislation. The industry believes that it is necessary to provide a legislative foundation on backfitting because legislation would provide: (1) the basis for long-term resolution which would transcend individual philosophy and (2) a message of stability to the nuclear industry as a counterpoint to the historically fluid nature of NRC regulation. Therefore, we strongly support the legislative approach of the DOE bill.

Both bills provide authority to NRC to issue combined construction permits and operating licenses. The industry has long seen such authority as the cornerstone of a stable licensing system which would once again permit utilities to consider nuclear power a viable option for the future. The DOE approach essentially achieves this required objective. The NRC bill, however, fails in this regard. While Mr. Cowan will discuss the combined CP/OL in detail, let me point out just two of the problems in the NRC approach. First, while it would authorize issuance of a combined CP/OL before construction commences, it would also require issuance, at the pre-operational stage, of an "operation authorization," which, according to the section-by-section analysis accompanying the bill, is to be considered a license for certain purposes, including judicial appeal. Thus, it is not a one-step license provision -- and I note the Commission is careful not to describe it as such. Second, the bill provides an open-ended opportunity for a public hearing at the pre-operational stage, as is the case with the current two-step procedure. The principal benefit of the combined CP/OL approach is the opportunity to resolve all significant issues in one early public hearing, and the elimination of the second hearing after the plant is essentially built and ready for operation. So long as that opportunity exists, it will be difficult to claim that a stable and predictable licensing regime has been created.

Both the NRC and DOE bills provide for replacing the current adjudicatory type public hearings with "hybrid" hearings. This is consistent with the evolution which has taken place since the distinction between adjudicatory and administrative type hearings was established in the Administrative Procedures Act. Hybrid-type hearings are already conducted by other regulatory agencies, and we believe their use by NRC would improve the public hearing process. We are concerned, however, with the NRC provision which would leave to the Commission's discretion in which, if any, proceedings they would be used. Like backfitting, we believe the hybrid approach should be mandated by law.

Both the NRC and DOE bills provide for approval of standard designs and separate site certification. There are some differences between the two bills, which Mr. Cowan will discuss, but basically the industry supports and encourages such procedures. Pre-approval of standard designs would improve the licensing process in several respects. First, it would improve safety by enabling both the NRC and the reactor vendors or architect-engineers to concentrate their resources on fewer designs. Second, it would reduce costs by enabling safety reviews to occur off the critical path, prior to a utility making a substantial investment in the design, thus reducing the time required to license a plant. Use of the same standard design by several utilities would further reduce the costs of designing and building plants. Moreover, utilities could plan with greater certainty, knowing that a given design had already been approved by the NRC. Similarly, pre-approval of sites would improve regulatory predictability and reduce costs by enabling site reviews to occur off the critical path. In addition, prior site approvals would facilitate public participation by allowing it to occur earlier in the process, before a substantial financial investment had been made in the site.

Finally, both the NRC and DOE bills have somewhat different provisions which, in certain circumstances, would make a state determination on need for power or the type of generation binding on the NRC. Providing for such state determinations is sound in principle and we endorse the concept. Personally, I see no need for redundant Federal treatment if a state has decided a plant is needed, and no utility would attempt to finance and build a plant if the state commission found it not to be needed. However, the appropriate interplay between state authority and the Commission in these areas is just a part of the overall Federal-state relationship in the nuclear area. Also, unlike the other provisions of the two bills which relate to licensing activities exclusively within the purview of the Atomic Energy Act, these provisions potentially impact on the Commission responsibilities pursuant to the National Environmental Policy Act. Accordingly, we believe it would be advisable to treat these matters in separate legislation.

I appreciate the opportunity to appear before the Subcommittee and I would now like to ask Mr. Cowan to complete the statement of our views.

ATTACHMENT 1

CHRONOLOGY OF CATAWBA OPERATING LICENSE PROCEEDING BEFORE THE NRC

Action	Date
Initial filing of operating license applications.	March 26, 1979
Refiling of operating license application.	March 31, 1981
Federal Register notice of filing of application and notice of opportunity for public hearing. (46 Fed. Reg. 32974)	June 25, 1981
Petitions to intervene filed.	July 1981
First Prehearing Conference.	January 12-13, 1982
Intervention status granted. Initial Ruling on Contentions for Hearing.	March 5, 1982
Fuel Load Scheduled for October 1982.	May 1982
Draft Environmental Statement issued.	August 5, 1982
Second Prehearing Conference.	October 7-8, 1982
Final Ruling on Contentions for Hearing.	December 1, 1982
Final Environmental Statement issued.	January 5, 1983
Third Prehearing Conference. (Fuel Load Scheduled for May 1984)	January 20, 1983
Safety Evaluation Report issued.	February 6, 1983
Supplement to Safety Evaluation Report containing Advisory Committee on Reactor Safeguards letter issued.	May 13, 1983

Action	Date
Submittal of South Carolina and North Carolina emergency plans to Federal Emergency Management Agency	May 30, 1983 June 3, 1983
Commencement of evidentiary hearings, exclusive of emergency planning contention.	October 4, 1983
Emergency plan evidentiary hearing.	Winter 1983-1984
Fuel load date.	Winter-Spring 1984
Initial decision on all issues except emergency planning.	Spring 1984
Initial decision - emergency planning.	Summer 1984
Receipt of fuel load and 5% power license.	Winter-Spring 1984
Need for power ascension above 5% power.	Spring-Summer 1984

ATTACHMENT 2

NTOL Nuclear Plants

The following plants are expected to be complete and ready for licensing in 1983 and 1984, assuming successful completion of ASLB hearings.

	Plant	Utility	Construction Completion Date
Contested Cases, ASLB hearing still open or pending	Byron 1	Commonwealth Edison	11/83
	Comanche Peak 1	Texas Utilities	9/83
	Byron 2	Commonwealth Edison	4/84
	Callaway	Union Electric	4/84
	Catawba 1	Duke Power Company	5/84
	Clinton 1	Illinois Power	1/84
	Comanche Peak 2	Texas Utilities	12/84
	Limerick 1	Philadelphia Electric	8/84
	Midland 2	Consumers Power	10/84
	Perry 1	Cleveland Electric	12/84
	Seabrook 1	New Hampshire Public Service	9/84
	Wolf Creek 1	Kansas Gas & Electric	10/84

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August 24, 1983

Honorable George John Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell:

This is in response to your letter of July 20 in which you asked for certain information relating to backfitting and the public hearing process. Also attached are answers to the additional written questions that you sent me.

Your letter asked for specific instances of unnecessary backfit requirements. This is expanded upon in your additional questions in which you asked for examples of inappropriate backfits, and how much these "inappropriate backfitting requirements cost." These are good questions that require thoughtful answers, and I intend to answer them. But let me start by again setting out, as I did in my testimony before the subcommittee, the fundamental problem with the regulatory process which cries out for reform:

> The current licensing process leaves fundamental issues open for reconsideration at the operating license stage, including whether the previously approved design is appropriate. It also subjects the utility to a myriad of changed and changing regulatory requirements during construction. The resulting constant shifts in scheduled completion dates require repeated trips to the financial markets to raise capital funds, often at terms which are less than optimum. The uncertainty and unpredictability which this creates make it difficult for a utility, before it makes the substantial financial commitment required, to determine when a plant will operate.
>
> Moreover, once a plant is licensed to operate, the current regulatory system can actually impede optimization of safety, as it does not require systematic analysis by the NRC of a new or modified regulatory requirement to determine if it is needed or cost effective on the basis of its impact on overall plant safety. Regulatory requirements are constantly imposed, and changed, without consideration of their impact on overall plant safety. The resulting backfitting of operating plants, which has now become routine, often diverts NRC and industry resources away from higher priority safety-related work. Requiring the NRC to perform such an analysis would assure that only those measures which enhance safe and cost-efficient operation are adopted. It should be noted that the NRC has instituted a number of internal reforms to improve its control over the imposition of new regulatory requirements, such as the establishment of the Committee to Review Generic Requirements

> (CRGR). CRGR's work has been most salutary. However, this sort of ad hoc approach to regulatory affairs cannot substitute for the systematic analysis of all new regulatory requirements which we propose.

I quote this testimony to clarify for you that while there are, indeed, instances of unnecessary or inappropriate backfits, the case for licensing reform does not rest on them. The problem is the fact that the current system does not provide for a systematic analysis of whether any new or modified regulatory requirement which may be proposed by the staff, the industry or others is needed and cost-effective on the basis of its impact on overall plant safety. You may find this incredible, but the fact is that before it imposes a requirement the NRC does not ask itself, "How will this improve overall safe operation of the plant?" Even where the proposed backfit does provide an increased increment of safety, the NRC does not ask itself whether such increment of safety is justified when measured against its cost. Indeed, one of the problems with the current system -- and one of the compelling reasons for change of that system -- is the fact that there are not even any standards for asking such questions.

This problem is documented in NUREG-0839, an NRC survey of licensees (copy attached). The report states that:

> A basic concern of the licensees is the number and scope of requirements imposed by the NRC through its several organizational elements. No one singular requirement is considered to be overwhelming.
>
> A persistent comment was that NRC requirements, and pending requirements, are poorly integrated as to their overall effect on plant operation and utility resources. A standard comment was that the impact of many changes on other safety-related activities has not been adequately evaluated.
>
> Backfit activities are using available funds and technical manpower to the extent that desirable modifications and some major plant maintenance activities have been and are being deferred.

The NRC's own conclusion based on the survey is, "Thus the potential for a negative safety impact caused by the number and scope of requirements, has become very real to both NRC and the nuclear industry. The full significance of this issue may have been underestimated by the NRC staff."

I hope the foregoing makes clear that the essence of our concern is not so much whether this or that backfit is necessary or appropriate. To some extent any judgment about the need for a particular backfit will be subjective. In the past, attempts to demonstrate the need for reform based on specific examples of unnecessary backfits have served only to divert the discussion to a debate on the merits of that particular backfit. Then, when another example is raised, the merits of that backfit would be debated, until we finally lose sight of what the problem really is. You can appreciate, therefore, my reluctance to start off down that road again -- and it was for that reason that I took care in my testimony not to get into a discussion of the merits of any particular backfit -- not because I don't think there are any unnecessary backfits, but because the problem which needs to be addressed is the layering of one requirement on top of another without any systematic consideration of their impact on overall plant safety. In short, there is at present no coherent set of standards against which the NRC staff is obligated to measure any proposed backfit.

Let me note that the industry is not complaining about backfitting per se. As my testimony states, the utilities themselves often initiate backfits. Under the approach we are recommending, backfitting will continue to occur. The only difference will be that, unlike the current ad hoc approach, each backfit will be evaluated in a systematic way which will sort out the needed safety improvements from the unnecessary. This will not only facilitate the imposition of good backfits, but provide the kind of documentation for which you are asking. The current system needs to be changed because it does not accomplish those objectives.

I hope I have persuaded you that the need to address the backfitting problem does not depend on the citation of specific examples of unnecessary or inappropriate backfits. Nevertheless, in response to your question, please refer to pages 6 and 7 of my prepared statement (pages attached) which sets out the results of a survey done by the Edison Electric Institute for the President's Private Sector Survey on Cost Control. This survey documents billions of dollars of backfits, including a number of instances where NRC miscalculated the cost of backfits by wide margins. Specific examples of unnecessary backfits and their costs based on the EEI survey are set out in an appendix to the report of the President's task force. Copies of the relevant pages are attached. Additional examples of unnecessary backfits are included in NUREG-0839 to which I referred earlier; in particular, refer to Appendix A, a copy of which is attached.

It is for the foregoing reasons that I said in my testimony that today nuclear power is not a future system available to utilities. It will not again become an option until some measure of order and predictability in the licensing and regulatory review process is established. The formulation of the backfitting provision in S. 894 (the DOE bill) would take a long step in that direction. That provision would not eliminate future backfits, but would assure that such backfits as may be required would actually enhance overall plant safety. I commend this provision to your consideration.

You also asked for examples of where the hearing process had delayed a nuclear power plant's operation. You will note that in my testimony I never singled out hearings as the exclusive cause of delays in the licensing process. What we do know is that highly contested proceedings take longer to complete than noncontroversial ones. In my experience, one reason for this is the defensive attitude that the staff and others take in the conduct of the safety review when they know that each determination may be questioned in a public hearing. This does not necessarily result in a better review but it does result in a longer one. The experiences at St. Lucie unit two and Palo Verde discussed in the attached answer to question three support this view point. Moreover, there is a synergistic relationship between hearings and construction schedules. The prospect of a bitterly contested and lengthy public hearing clearly influences decisions about the pace at which construction should proceed. Ordinarily, a utility will pace construction to coincide with completion of public hearings and other key milestones in the licensing review process. Thus, the effect of "delays" on construction schedules can be masked by other considerations.

Nevertheless, as I earlier stated in my testimony, I can point to a serious potential delay from the public hearing process which currently faces my own company in bringing our Catawba nuclear plant on line. Of course, any such delay will not only directly affect Duke Power Company and its ratepayers, but also the municipal and cooperative co-owners of the Catawba plant.

I do not intend to repeat what I said in my testimony, but events which have transpired since that time make it even more likely that the licensing process might impinge on the full power operation of Catawba.

Catawba is being built ahead of schedule, and consequently we accelerated the fuel load schedule from October 1984 to May of 1984. As you will recall, the Licensing Board's reaction to that announcement, made in January of 1983, was to state that it was unsure whether the hearing process -- which at that time had been underway more than one and one-half years -- could "accommodate" a five-month acceleration in the fuel load date, announced 18 months prior to anticipated fuel load. As the Board noted, the most significant variable was contentions relating to emergency planning, which had not then been raised because the emergency plans were not published. I might note in passing that it has been our position all along that many of the issues relating to emergency plans could be filed well in advance of publication of the specific plans.

Since I testified before you, the emergency plans for Catawba have been published, contentions have been filed, and the Licensing Board has made a partial ruling on admissibility of some of the contentions. However, several of the proposed contentions are still pending before the Licensing Board.

The Notice of Hearing was first published in June of 1981, more than two years ago. Hearings on some of the contentions in the case, exclusive of emergency planning issues, are now scheduled to begin October 4 of this year. Hearings are not now scheduled for the remainder of the contentions, exclusive of emergency plans, though it is contemplated that the hearings on such issues will be completed before the end of the year. At present there is no schedule for commencement of hearings on emergency planning issues, though it is a virtual certainty that they will not begin until after the first of the year. Therefore, it does not appear that a decision authorizing full power operation of Catawba will be forthcoming until the summer of 1984, or even later. Should Catawba be ready to operate at full power before that time, any delay would be extremely expensive to our ratepayers and to the municipal and cooperative electric system who are our partners in this plant. It is for this reason that I support extension of the NRC's authority to issue temporary operating licenses.

The hybrid hearing procedures that I supported in my testimony are not designed primarily to shorten public hearings, although it is hoped that will be one of the benefits achieved. The hybrid procedures make a good deal of sense from both the public's and the industry's perspectives. Valuable resources are now expended in the preparation and trial of numerous issues that could be resolved through less formal procedures. Adjudicatory procedures would still be available, however, where required to resolve genuine and substantial disputes of fact involving matters the Commission is likely to depend on in reaching its decision. Except for these matters material could be introduced into the record without the formalities associated with formal pleading. This would facilitate the participation of interested members of the public and, perhaps, even provide a broader record for the Commission's consideration. At the same time, by limiting adjudication to fewer issues it is likely that more thorough consideration could be given to them. Congress recently included similar hybrid procedures in the Nuclear Waste Policy Act of 1982, and there is no reason why they should not be extended to plant licensing proceedings.

I am pleased to have this opportunity to provide you with further information on these issues relating to the licensing reform measures. The answers to your additional questions are attached.

Sincerely yours,

William S. Lee

William S. Lee
Chairman and Chief Executive Officer

Attachments

August 24, 1983

ADDITIONAL QUESTIONS SUBMITTED BY SENATOR MITCHELL

Q1: One of the mos serious complaints against the NRC licensing procedures concerns the backfitting regulations. I would like to know specifically which backfitting orders over the past 10 years you think were inappropriate, why you believe they were, what alternative safety procedure could have been taken and how much the inappropriate backfitting requirements cost?

A1: This question is answered in the accompanying cover letter.

Q2: One of the reasons why so many changes are ordered now is that construction permits are allowed with only 25% of the plans available to the NRC. For "one-step licensing," 90% of the plans would have to be available. Would the companies be willing and able to provide these fuller plans? Why do companies not provide more information now at the construction phase? If design plans could be settled now so that they could not be raised again at the operating license phase, would companies be willing to submit plans which are 80-90% complete under current procedures?

A2: If I understand the thrust of your question, the answer is yes, we would be willing to provide all of the information at the preconstruction stage which the NRC needs to review and evaluate the safety of the design. However, I have difficulty coming to grips with your statement that "90% of the plans would have to be available," since I do not know what it means. The term does not have any definitive meaning in the context of existing NRC regulations or industry practice.

Let me illustrate. At the one-step licensing stage, the applicant could commit that all reinforced concrete will be designed to conform to a specified code of the American Concrete Institute. If that code is acceptable to the NRC, that is all that need be said about concrete design to get the license. Thereafter, the thousands of calculations and hundreds of design drawings could be prepared to show how each beam, column, wall and slab are to be built. Tens of thousands of shop sketches would have to be prepared to specify the pre-bending of each bar of reinforcing steel. All these drawings would be checked to assure compliance with the code, and hence the license. Yet zero percent of this design would have been done prior to the one-step licensing.

So you can see that percentage of design completion is not an appropriate measure of the information necessary for the NRC to complete a one-step licensing review. It is more appropriate to describe the level of information needed to obtain a one-step license as "all the information the NRC needs to reach reasonable conclusions regarding the safety of the design." This level of information should be specified in regulatory guidance documents as is now the case for the information needed to obtain a construction permit or operating license. Applicants would be willing to provide this information, which represents a significant investment, if adequate backfit protection is in place to protect that investment. The Atomic Industrial Forum's Subcommittee on Standardization has been engaged for approximately the past year in an effort to develop the appropriate level of design information for a single stage license application. The primary product of this effort will be a proposed revision to Regulatory Guide 1.70 R3 (Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants), which will describe the information needed to obtain a single-stage license. In addition, actual sample sections of a single-stage safety analysis report will be prepared to illustrate the type and level of design detail we propose to provide in such a safety analysis report. The effort is approaching a stage where communications are being initiated between the Subcommittee and the NRC. Whatever the final outcome, the regulatory guidance documents which NRC would publish to implement a one step procedure would spell out the specific information which must be submitted, rather than express it in terms of any particular percentage of completion.

You also asked why companies do not now provide more information at the construction phase. The answer is that, under the current two-step licensing process there is absolutely no incentive to do so. Indeed, under the current system, there are disincentives to do so. First, it should be understood that preparation of detailed design information is an expensive and time-consuming proposition, therefore preparation and submittal of such information at the construction permit stage would constitute a substantial burden. Under the current two-stage licensing process an essentially separate review is done at the operating license stage. There is at present no regulatory requirement which would bind the NRC to the findings that it made at the construction permit stage, and hence there is no assurance that detailed design work performed for the construction permit will continue to be acceptable at the operating license stage. Moreover, absent an effective backfit rule, utilities are reluctant to make the investment in money, time, and resources necessary to provide detailed design information at an earlier stage than is now the case, because there is no meaningful assurance that the NRC will not change the rules in a manner which would render the design information invalid. In short, implementation of an effective regulatory system which would bind the NRC to the findings it makes at the construction permit stage and put into place an effective backfit rule is necessary to provide the kind of assurance utilities need to submit detailed design information at an earlier stage.

Q3: A number of plants have been completed in only 7 or 8 years from construction permit approval. How is it that plants like St. Lucie's in Florida have made it through the NRC regulatory process in this manner when other plants have had such difficulty?

A3: St. Lucie Unit 2 demonstrates that it is, indeed, possible to build a nuclear power plant in just six years. Unfortunately, there is not much hope under the current approach to licensing that this example will often be repeated, but it could be if the reforms set out in the pending legislation were enacted.

An examination of the actual circumstances that existed at St. Lucie Unit 2 is instructive. First, unit two is a near twin of unit one. Design of unit two was nearly 75% completed before the start of construction, and site preparation began in June 1976, under a limited work authorization, several months before unit one went on the line. Because of this overlap, Florida Power and Light Company was able to retain the experienced labor force which had been assembled for unit one. Close to 80% of the skilled laborers and half of the non-manual laborers stayed on to build the second unit. Moreover, St. Lucie Unit 2 was not a heavily contested case. This is significant since the prospect of having to defend each and every determination in licensing hearings increases the complexity and length of the staff review process. Thus, while it usually takes about thirty months to get the safety checkoff needed for an operating reactor, Florida Power and Light was able to clear this hurdle in nine months. It should be noted that Arizona Public Service Company's Palo Verde unit, which is being completed in just over seven years, also is not a highly contested case.

The reforms proposed in the pending legislation would help to assure that future plants could be completed in a six to eight year time frame, particularly the provisions related to standardized plant approvals and the hearing process. This would be consistent with foreign experience where there has been standardization with more complete design information available up-front and a "one-step" licensing process which includes a rational procedure for evaluating backfits utilizing cost-benefit methods and a more disciplined participation early in the process.

Q4: Given that emergency planning, management ability, and operator training cannot be examined until near the completion of a plant, does it make sense to approve a final operating license before construction? How will public confidence in the system be affected if no hearing is held on these matters before operating begins?

A4: The premise of the combined CP/OL process is that all significant issues will be resolved before the license is issued. As I said in my testimony, so long as the opportunity for an open-ended public hearing exists at the pre-operation stage, it will be difficult to claim that a stable and predictable licensing regime has been created. This would impose a substantial impediment to utilities making further commitments to nuclear power.

To answer your question, it is necessary to put the issue in a broader context. One-step licensing requires a significantly larger up-front commitment from the utility, the vendor, the architect-engineer and others involved in the licensing process. It also requires a more detailed review by NRC than is now the case. It requires that comprehensive criteria be in place against which to review and evaluate all important licensing parameters. Finally, it requires a rigorous NRC inspection and testing program. As you may know, for the last several years the NRC has been upgrading its activities in this area and resident inspectors are now in place at all reactors under construction.

As the foregoing illustrates, one-step licensing will occur in a very different environment than that which exists today. All important issues will be thoroughly examined and resolved at the pre-construction stage. The criteria governing construction, quality control and licensing procedures will be tested. All of these issues will be subjected to a more comprehensive hearing process than is the case today. Public participation will be enhanced by providing for public input earlier in the proceeding and in a more comprehensive and meaningful fashion.

The specific issues you mention -- emergency planning, management ability and operator training -- are all susceptible to review and evaluation at the pre-construction stage. Indeed, one of the problems with the present process is that it leaves resolution of such important issues to the tail end of the process when the plant is built and ready to operate. Clearly it is not reasonable to wait until a plant has been built and billions of dollars have been invested to evaluate whether an adequate emergency plan can be devised for the facility, whether management is capable of operating the plant in a safe and efficient manner, or whether there is an adequate operator training program in existence.

With respect to operator training, it must be remembered that plant operators are licensed individually and not as part of the plant licensing process. Thus, while it is reasonable to require a utility to have an adequate training program, the qualifications of the operators themselves are more appropriately considered separate and apart from the plant licensing process.

With respect to emergency planning, there are currently in existence plans covering all operating plants and most plants under construction. While not all of these plans have completed the rigorous FEMA and NRC review processes, it is possible to establish detailed generic criteria that the plans must meet, and it is possible for a state, a locality or a utility applicant to submit a detailed plan in compliance with those criteria at the pre-operational stage. The only reason this is now being deferred until the pre-operation stage is that the requirement for mandatory off-site emergency planning was not promulgated until 1980 when all existing plants already had construction permits or were operating. A more rational system would require this to be squared away at the pre-construction stage. It is true that actual tests of the plan would most likely not take place until some time later, but the purpose of those tests is not to establish the adequacy of the plan, but provide training and to help to identify where improvements might be made. NRC and FEMA already have sufficient authority to deal with this situation, as evidenced by the recent Indian Point proceeding.

So far as management capability is concerned, I find it hard to believe that the NRC will ever again issue a construction permit without a thorough examination of this issue whether any new legislation is enacted or not.

There is no reason why this issue cannot be examined just as well at the construction permit stage as at the operating license stage, and it should be. If management is once determined to be capable, but deficiencies are later discovered, whether during construction or after operation commences, NRC again has adequate authority to deal with this situation.

It must be understood that one-step licensing does involve a trade-off. Much more is required of the applicant and the NRC at the front-end of the process. This results in greater assurance that the plant is safe, while at the same time providing an enhanced opportunity for meaningful public participation. In return for this, a utility who then goes out and spends several billion dollars is provided some greater assurance that the plant will some day operate. This is an appropriate balancing of the interests of the public and the utility and it is a necessary one if nuclear power is to play any further role in meeting our nation's expanding requirement for electricity.

You ask how public confidence will be affected if no hearing is held at the pre-operational stage. I do not believe public confidence is served by the present system which presents the spectacle of lawyers battling over issues which should have been resolved before the pressure of billion dollar investments raises apprehension in the minds of some as to whether they will be fairly resolved. I believe this present system diminishes public confidence in the public process by which those decisions are made, whatever the outcome. The combined CP/OL approach provided for in S. 893 (the DOE bill) will increase public confidence by assuring that decisions are made at the appropriate time and by providing for more meaningful public participation.

Q5: Many improvements in NRC procedures can be accomplished without legislation. What improvements do you see can be done without legislation? What are your priority areas which require legislation?

A5: Control of backfitting could clearly be accomplished without legislation. Theoretically, hybrid hearing procedures could be implemented without legislation, although some lawyers do not agree and protracted court challenges might be expected. One-step licensing, standard plant approval and separate site approval all could be implemented through administrative action, although appropriate legislation would be required to provide the assurance needed for utilities and vendors to embark on the very expensive task of licensing a plant or obtaining a design or site approval. NRC administrative actions cannot provide the needed "finality" to any determinations in these areas.

Furthermore, the fact that many of these reforms could be accomplished without legislation does not mean that they will be. This is underscored by the fact that the NRC itself has submitted legislation dealing with them in one fashion or another. If the problems which have been identified in the licensing process are going to be resolved, Congress will need to take the initiative.

Backfitting is a good example of why we need legislation. While not seeking legislation on this subject, NRC agrees that some order must be brought to the process. More than 18 months ago the Commission established a task force to recommend a proposed rule. The task force did come up with a proposal which has been before the Commission for nearly six months. Now, rather than acting on the proposal the Commission intends to issue an advance notice of rulemaking, a procedure which is almost guaranteed not to produce a final rule for at least two years, if ever. In any event, this issue is of such fundamental importance that it is appropriate for Congress to provide the Commission with firm guidance. Action on this matter is our highest priority.

Similarly, Congress should act with respect to one-step licensing, standard design approval and separate site approval. These innovations are necessary to provide a stable licensing regime for future applications.

Finally, hybrid hearing procedures make a good deal of sense. Hybrid procedures should make it possible for the public to participate in a more meaningful way without incurring a lot of the expense associated with the across-the-board adjudication, while at the same time preserving the procedural safeguards of adjudication for those issues which need to be more formally tested. Congress has already established such procedures in the Nuclear Waste Policy Act of 1982 and there is no reason why they should not be extended to licensing proceeedings.

These are the priorities on which we believe it would be appropriate for the Congress to legislate.

In an effort to understand the cost and schedule impacts of NRC regulation, last summer the Edison Electric Institute conducted a survey of nuclear plant operators. While it is not possible precisely to distinguish and quantify costs and delays caused by the regulatory process, as opposed to other reasons, the overall results of the survey suggest that the costs of regulatory changes for plants which have received licenses since 1970, or will soon receive a license, run to tens of billions of dollars.

The EEI survey shows that owners of 41 nuclear units that received operating licenses between January 1970 and December 1978 estimate that their total backfitting costs, after receiving their operating licenses, exceed $3 billion dollars, which is about 25 percent of the initial costs of these plants. Approximately $1 billion of these costs can be attributed to utility initiated backfits to improve operability and maintainability, $1.5 billion to NRC backfits not related to the TMI-2 accident, and $0.5 billion to NRC required backfits on TMI lessons learned. An additional $1 billion in backfits has been projected over the next few years to satisfy existing or expected NRC requirements. I do not suggest that the backfits are unjustified. Indeed, the fact that $1 billion of the backfits were utility initiated clearly shows that utilities recognize the appropriateness of plant improvement when new information warrants it. What the breakdown does show is that NRC imposed backfits constitute a significant portion of the facilities' overall costs. The imposition of billions of dollars' worth of changes, ultimately paid for by the same public whose interests are the professed object of the backfits, certainly warrants a systematic, analytical consideration of safety benefits.

As one example, the Oconee Power Station of Duke Power Company consists of three PWR nuclear units with a combined capacity of 2661 MWe. Commercial operation of the first unit was July 16, 1973, the second unit was September 9, 1974, and the third unit was December 16, 1974. Total cost of the units was $493 million, equivalent to $185 per KW. Backfitting costs for the three Oconee units through June 30, 1982 have been $179 million. These costs can be allocated as $142.2 million for NRC imposed backfitting other than TMI-related, $21.4 million for TMI lessons learned backfitting; and $15.2 million for utility initiated backfitting. An additional backfitting cost of $121 million is anticipated for the Oconee units to satisfy the existing and projected requirements of the NRC.

The NRC has made attempts in the past to estimate the costs for specific backfits. However, those costs are sometimes not accurate. For example, Northeast Utilities selected certain requirements from NRC's TMI Action Plan (NUREG-0660) and compared the NRC's cost estimates to the actual capital costs for implementing those requirements at its Haddam Neck Plant. The installation of Reactor Vessel Head Vents was estimated by the NRC to cost $100,000; in actuality it cost $1,102,000. System Integrity Review was estimated to cost $5,000 per plant by NRC; in actuality it cost $1,144,000. By contrast, the NRC estimated that a Plant Shielding Review would cost $50,000; instead it cost $6,000. Northeast Utilities concluded: "[H]ad the NRC performed realistic Value-Impact Analysis on recent TMI Action Plan requirements and properly weighed cost against benefit, a number of requirements would not be justified in terms of increased plant safety." These examples do not instill confidence that all of the billions of dollars spent on backfitting to improve safety have been spent to the best advantage.

EEI has examined the cost and schedule increases experienced by plants currently coming on line as compared to earlier units. The cost of units surveyed by EEI increased from an average of $169 per KWe in the 1970-72 period, to an anticipated range of $587 to $3,062 per KW for 23 units coming on line between January 1980 and December 1983. The total cost estimate of the 23 plants when they received their construction permits was $11.6 million. The estimate of last summer had increased to $35.5 billion, an increase greater than a factor of three. These numbers show cost increases far beyond the impact of normal inflation and escalation. An examination of construction times showed that the normalized average period between construction permit and operating licenses increased from an average of 80 months per 1000 MWe in 1970-72 to an average of 103 months per 1000 MWe for the 23 surveyed plants coming on line between January 1980 and December 1983.

A comparison of costs and time to construct the Zion and Byron power stations illustrates the impact of the unstable regulatory environment. Each station has two pressurized water reactors of about the same size, from the same manufacturer, were designed by the same architect-engineer and were constructed by the same contractor. Zion cost $582 million, took 52 months to construction, and began commercial operation in October 1973. Byron is estimated to cost $2,764 million, take 92 months to construct, and begin commercial operation in February 1984. While inflation and the high interest rates are contributing factors, the utility estimated that about 60 percent of the cost increase is the result of NRC regulatory changes. A comparison of the costs of the Oconee, McGuire and Catawba stations of Duke Power Company shows a similar result. All these stations are pressurized water reactors, designed and constructed by Duke Power Company. The costs of Oconee may be used as a benchmark for comparison of the regulatory cost impact on the later units. Practically all the materials were purchased and most of the labor performed for Oconee before 1974. Thus, conservatively, the actual Oconee station cost of $185 per KW can be taken to represent 1973 dollars. By using the Bureau of Labor Statistics inflation factors and adjusting the number to account for three units at the Oconee station, the 1982 value of an equivalent Oconee plant cost would be about $445 per KW for a two unit plant. Since a primary difference between 1973 and 1982 other than inflation is the regulatory environment, a majority of the additional costs for the McGuire and Catawba stations may be assigned as a regulatory impact. While a portion of the added costs are the results of changes desired by the utility, it is conservatively estimated that at least 60 percent of the increase is the result of NRC regulatory changes. The additional cost in 1982 dollars for the McGuire Station is $1,893 million and for the Catawba Station is $2,345 million. A 60 percent regulatory impact is $1,136 million for McGuire and $1,407 million for Catawba. This added regulatory impact on McGuire and Catawba is about 40 percent of the total station 1982 equivalent value.

There is little doubt that the unpredictability of NRC actions and regulatory changes were major contributors to the increases experienced at all of the plants now coming on line. And, since there has never been an identified acceptable regulatory safety goal and no measurable basis of safety or cost/benefit analysis provided for the many regulatory changes, the true safety value of what we have bought for our plants is unknown. Safety must be provided, but safety is ill-served by the instability of the licensing and regulatory processes.

STATEMENT OF BARTON Z. COWAN
BEFORE THE NUCLEAR REGULATION SUBCOMMITTEE
SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

June 14, 1983

My name is Barton Z. Cowan. I am a partner in the Pittsburgh, Pennsylvania law firm of Eckert, Seamans, Cherin & Mellott. I am appearing here today in my capacity as Chairman of the Lawyers Committee of the Atomic Industrial Forum, Inc. and Co-chairman of a joint committee of the Forum, the Edison Electric Institute and American Nuclear Energy Council formed early in 1982 to work on licensing reform.

The Lawyers Committee of the Atomic Industrial Forum, Inc. is comprised of approximately seventy-five lawyers involved in all aspects of nuclear energy law. Since early 1982 active operations of the committee have been conducted by a Steering Group comprising eighteen senior industry lawyers, who among them have over 300 years of experience with the nuclear regulatory process, including involvement in the licensing of almost every domestic nuclear plant during the past two decades. Included among the Steering Group membership are a number of lawyers who have held positions within the Nuclear Regulatory Commission, and its predecessor, the Atomic Energy Commission, including a former Chairman of the Commission, a former general counsel, and a former Director of Regulation. The members of our committee have seen both the best and worst in nuclear regulatory practice, and are well qualified to address the subject of nuclear regulation and reform by virtue of their long association with the nuclear regulatory process.

The purpose of my testimony today is to discuss the regulatory reform legislation proposed by the Department of Energy (Nuclear Licensing and Regulatory Reform Act of 1983 (S.894)) and by the Nuclear Regulatory Commission (Nuclear Power Plant Licensing Reform Act of 1983 (S.893)) and to state our position with respect to the various proposals. During the course of this presentation, I will indicate where we agree or disagree with various legislative proposals and in some instances will suggest alternatives which we believe would result in a sounder regulatory process. Before turning to the main portion of my presentation, however, I would like to comment briefly on the need for reform of the nuclear licensing process.

Need for Reform

Whenever nuclear industry members get together and the subject turns to licensing and regulation, the central theme that emerges is that the nuclear licensing process is not working properly. I think it is fair to say that we look upon the present process as an activity fraught with uncertainty, lacking in stability, and, at times, rationality. Basic reform is urgently needed.

The reality of licensing today is that the process has devolved into what one member of our committee has termed a "costly procedural labyrinth" where the search for an error free legal record has become paramount, reducing to secondary importance the quest for sound technical decisions. The end result has been to reduce some aspects of the hearing process to an exercise in trivia, and, more important, to divert Commission and industry expertise and knowledge from areas of inquiry and review which might further enhance the safety of nuclear power facilities in favor of an agenda which sometimes loses sight of the purpose of regulation - protection of the public health and safety and of the environment. Thus, improving the focus on the safety of the plants is the most important justification for reforming the licensing process now. In addition, regulatory reform should afford the public a better opportunity to have meaningful and timely input into the licensing process. Finally, the regulatory process must be reshaped to instill discipline and re-establish a sound framework for regulation of nuclear facilities and to eliminate to the maximum extent possible the instability which currently exists.

Both the NRC and DOE, of course, recognize the need for licensing reform. The bills which they have drafted and which have been submitted to the Congress for consideration demonstrate this recognition, as does the work of the Commission in connection with administrative licensing reform. It is our hope that these efforts will see fruition in the passage of legislation which will bring greater stability to the licensing process and thereby enhance the public health and safety.

Let me now turn to the issues involved in licensing reform as reflected in the proposed legislation. Although both proposed bills address in some fashion each of the major areas of suggested licensing reform, we see many differences in the results created. In most instances, we favor the approach taken by the DOE bill, which we believe represents realistic reform. I am sorry to say that in some instances the proposals of the NRC for reform do not make the kind of changes which are necessary and meaningful, and provide only the illusion of reform without substance. Accordingly, as I will develop, we strongly favor the DOE bill in its major essentials.

My comments on the proposed reform legislation are divided into five topics, generally corresponding with the areas for reform proposed in the NRC and DOE draft legislation, as follows: (1) backfitting; (2) single-stage licensing; (3) hybrid hearings; (4) early site reviews and approval; and (5) approval of designs. In addition, my comments include remarks on the question of certification of need for power and the introduction of the National Environmental Policy Act of 1969 ("NEPA") into the Atomic Energy Act of 1954, as amended ("AEA").

Backfitting

From the standpoint of the operating utilities and those utilities with plants currently under construction, and from the standpoint of stability of the licensing process over the long haul, backfitting is the single most important aspect of licensing reform. There is a consensus, clearly agreed to by both DOE and the NRC, that backfitting is a regulatory reform which needs to be addressed. The difference between the NRC bill and the DOE proposal in this area is a difference as to where substantive revision with respect to backfitting should be treated. Thus, the legislation proposed by the NRC merely would require the Commission to establish criteria and procedures for control of the application of new requirements to licensed facilities. (NRC Proposal, § 203). After new regulations are established by the Commission, no license could be modified except pursuant to such regulations. Although the DOE bill also would require the NRC to adopt regulations for backfitting, it sets forth the substantive treatment which the NRC would be required to utilize in any such regulations. (DOE Proposal, § 101, adding new § 29a to the AEA). Thus, the DOE bill establishes a specific backfit standard and specifies the factors the NRC must include in its evaluation and approval or disapproval of proposed new requirements. In addition, the DOE bill contains a comprehensive definition of backfitting.

We believe it is desirable for the Congress to provide the Commission with direction and legislative guidance in the backfit area. Accordingly, we strongly support the approach to backfitting which is embodied in the DOE bill.

As a legal matter, there seems to be little question[1] that the NRC currently possesses authority to adopt regulations with respect to backfitting. In fact, the Commission has had a backfitting regulation in place for many years - 10 CFR § 50.109 - but it has not enforced that regulation. The Commission also has been considering administrative reform of its backfit rule for the last two years but has yet to even publish a rule for comment, let alone revise the rule to bring hard analysis and stability to the backfit process. In March of this year the Commission chose to ignore its current backfit rule, rejecting a recommendation of the Chairman of its Regulatory Reform Task Force that it instruct its Staff to follow the current backfit rule.

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[1] One member of the Commission's Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals questioned the legality of the Commission adopting, without authorization by Congress, new backfit regulations which are very similar to the legislative proposals of the DOE in this area. Report of the Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals on the Administrative Reform Proposals of the Regulatory Reform Task Force, March 22, 1983.

We believe that unless Congress not only directs the Commission to establish criteria and procedures for controlling backfits but also specifies the parameters of those criteria and procedures, the current situation is unlikely to be relieved by the Commission through rulemaking. Appropriate legislation is desirable since it would provide a clear expression of Congressional intent and a continuing impetus for the NRC to enforce the backfitting criteria and procedures.

As stated by the Commission's Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals ("Commission Ad Hoc Committee"), everyone agrees "on the value of requiring a disciplined, documented justification for the imposition of new or modified requirements and high level review of each such justification" (Ad Hoc Committee Report, March 22, 1983, p. 5). It is just such a disciplined, documented process that is lacking today.

A sound backfitting provision should contain the following four elements: (1) the standard to be applied in order to establish when a backfit will be required; (2) a definition of backfitting which is comprehensive in nature; (3) the items to be analyzed in determining when the standard has been met; and (4) the procedure to be utilized in determining when the standard has been met.

Any backfit legislation should include a single backfitting standard applicable in all situations where backfitting questions arise in proposed modifications of issued licenses, of design and site approvals and in renewal of such approvals. Thus, the standard should be applicable both to operating plants and those in the licensing pipeline. Further, the rule should cover the proposed imposition of backfits via rulemaking, license amendments and new or revised Staff guidance.

We favor a standard for backfitting under which backfitting would require a clear demonstration by the Commission that the proposed backfit will substantially enhance public health and safety as a result of improved overall safety of facility operations, and that such improvement is justified when considered over the remaining life of the facility. An exception should be provided when the Commission determines a backfit is necessary immediately to protect the public health and safety or common defense and security.

Backfitting should be broadly defined to include not only modifications or additions required by the Commission, after a license (including a construction permit) has been issued, to structures, systems or components of a facility, but also changes proposed to procedures pursuant to which the facility is to be constructed or operated, or the organization required to construct or operate a facility. Further, any definition of backfitting should make it clear that backfitting includes new analysis or testing requirements which would impose substantial costs on licensees or approval holders.

The backfitting provision also should set forth appropriate factors which must be taken into account by the Commission in its analysis before determining that a backfit is warranted. Finally, a proposed backfit legislation should require a systematic and documented review process before a backfit can be imposed.

A joint committee of the Atomic Industrial Forum, Edison Electric Institute and American Nuclear Energy Council and a utility group known as NUBARG (an acronym for Nuclear Utility Backfitting and Regulatory Group) have been considering for over eighteen months the matter of a desirable backfit rule. While we have minor difficulties with certain wording of the DOE proposal, we believe the DOE approach to be sound.

Combined Construction Permit/Operating License - Single-Stage Licensing

Fundamental to any reform of the licensing process must be a provision for single-stage licensing. There is a compelling need to allow a facility to be licensed for construction and operation in a single proceeding, and thereafter to proceed through construction into operation without the necessity of undergoing a second hearing at the operating license stage.

The time to decide whether a plant should be built, and the design and safety parameters which it must meet, is when the plant is involved in what today is called the construction permit process. We believe it is possible to provide sufficient information and criteria when a plant is proposed to enable the NRC to determine at that time whether the facility can be constructed and operated in conformity with the Atomic Energy Act and Commission regulations. The opportunity for the public to provide input to the process and to challenge the plant clearly should be afforded at a stage where such input is meaningful - before the facility has received authorization for construction. Thereafter, it should be the responsibility of the regulatory agency, through its staff, to determine whether the facility has been constructed in accordance with the license. To leave open for challenge until plant construction is almost complete and operation is imminent such fundamental issues as whether the basic design is safe, whether the site is suitable and other important technical and operating parameters introduce uncertainty and unpredictability without contributing to safety. Moreover, parameters and requirements for matters such as assurance of quality of construction and emergency planning also can be established before the facility is approved for construction. Thereafter, the regulator - the NRC - should assure compliance with the license through its inspection and testing processes, without the necessity for redundant hearings.

In short, we believe a single license - combining a construction permit and an operating license - should be authorized, and only one hearing allowed prior to the grant of such license before construction begins. No further hearings should be mandated, although procedures should be available for bringing to the attention of the NRC alleged violations of the license. In this regard, the Commission regulation currently in existence in 10 CFR § 2.206 seems to be appropriate and adequate.

We believe the approach to single-stage licensing taken in the DOE bill in its proposed Section 185 is sound. (DOE Proposal, § 102, amending § 185 of the AEA). Under the DOE approach, after a facility has been constructed pursuant to a single construction and operating license (COL), the COL holder certifies the facility has been constructed in conformity with the COL, the Atomic Energy Act and the Commission regulations. Following a report from the Staff as to whether the certification is correct and whether operation should be allowed, prohibited or limited, the Commission may limit or prohibit operation of the facility. Otherwise the licensee may commence operation after certain statutory time periods have expired. We strongly support this concept and approach.

The combined construction permit and operating license proposals in the NRC bill (NRC Proposal, § 101, amending § 185 of the AEA) are totally inadequate and non-responsive to the problems created by the current dual licensing approach. In fact, when taken as a whole, the provisions in the NRC bill do not provide for single-stage licensing. If enacted, the NRC provisions may exacerbate the present undesirable situation by creating the opportunity for more issues to be heard and reheard at the operating license stage, thus increasing the possibility for delay and again diverting attention from safety matters. Accordingly, we oppose the NRC proposals in this area.

The fundamental differences between the approach of the DOE and the NRC on single-step licensing arise, in my judgment, because of an underlying philosophical difference. The Commission seems to proceed on the assumption that every issue which must be examined requires a public hearing - or at least an opportunity for public hearing - without regard to the quality or meaningfulness of public participation. Meaningful public participation in the regulatory licensing process must come at an early stage, where the questions raised can have realistic input to the licensing process. Once a plant has been constructed and is ready to operate, challenges to the plant rarely, if ever, result in any significant changes in design or operation. It seems to me that it is more important to consider and decide issues early, without raising the essentially false hope that later hearings when a plant nears operation can result in anything more than delay.

The NRC approach also seems to be premised on a lack of confidence by the Commission in the ability of its Staff to perform properly its inspection function while the plant is under construction, and a belief - not supported in my judgment - that somehow the public through a hearing process will catch errors which are not detected by either the utilities, their contractors or the Commission Staff.

The NRC approach is deficient in two major respects, each of which makes the provisions essentially useless in accomplishing their goals. First, although the NRC proposal provides for a "combined construction permit and operating license," and sounds reasonable in requiring an application contain "sufficient information to support the issuance of both a construction permit and an operating license" (NRC Proposal, § 101, amending § 185 of AEA), the section-by-section analysis defines this as requiring "an essentially complete design." This phrase implies that the level of detail needed to obtain a combined construction permit and operating license ("COL") is essentially that which is now required for submission of the Final Safety Analysis Report. Such a level of detail is not needed for the Commission to make the safety determination with respect to the plant in order to grant a combined COL. What should be required is a degree of information sufficient to enable the Commission to determine whether the plant, if built in accordance with the application, can operate without undue risk to the public health and safety or common defense and security. The information in some cases may consist of design details, but could also involve standards or criteria against which to measure designs yet to be detailed. The workable level of design detail required to obtain a combined COL should be developed through implementing regulations and guidance. In this way, benefits of advanced detailed design and safety improvements can be obtained where such design and safety improvements are not yet developed when the COL is issued.

The single-stage COL also should establish what inspections, tests and analyses must be performed to confirm that the plant as constructed conforms to the terms of the license (and hence to the requirements of the AEA and Commission regulations). For each inspection, test and analysis, specific acceptance criteria could be established which must be met in order to assure proper construction. The same format can be used for such matters as management structure, quality assurance, emergency planning, etc. In this way, the inspections, tests and analyses to be performed and the specific acceptance criteria to be met would be considered during the combined COL hearing and would be included within the license. Thus, at an early stage, the public would have an opportunity to participate when a meaningful contribution could be made.

Second, the NRC bill in proposed Section 185b requires the Commission to "find" that the facility has been constructed and will operate in accordance with the provisions of the combined construction permit and operating license, the provisions of the AEA and the regulations of the Commission. (NRC Proposal § 101, amending § 185b of the AEA). Further, under proposed Section 189a(1)(C), the Commission must publish notice at least one year prior to commencement of operation with respect to any facility which has a combined COL and must grant a hearing upon the request of any person whose interest may be affected by such operation. (NRC Proposal, § 102, amending § 189 of the AEA). These provisions effectively negate the idea that the NRC is proposing a single-stage license. The Commission should have the responsibility to insure through inspection and testing that the plant was built and other necessary action was taken in accordance with the combined COL and that all other Commission requirements for operation are satisfied. There should, however, be no further authorization required by the Commission and no hearing at this pre-operational stage of the combined COL process.

In an attempt to ameliorate the problem posed by its bill, the Commission has proposed that any hearing at the operating license stage "be limited to issues that were not and could not have been considered and decided in a prior proceeding before the Commission" unless the proponent of the hearing request makes a "substantial evidentiary showing" that "significant new information relevant to the issue has been discovered since the prior proceeding and that as a result thereof it is likely that the facility will not comply with this [the Atomic Energy] Act, other provisions of Federal law, or the Commission's regulations." (NRC Proposal, § 102, amending § 189 of the AEA. See § 189a(1)(D)). Although this sounds like a substantial threshold for admissibility of issues at the operating license hearing, experience in current licensing with respect to admission of late-filed contentions in Atomic Safety and Licensing Board proceedings raises serious doubts that any threshold will be meaningful in actual practice. Accordingly, where an issue is raised prior to plant operation as to whether a plant, as built, complies with the combined COL, we favor the procedure established in Section 2.206 of Commission regulations (10 CFR § 2.206) wherein a person must file a request with the Director of Regulation to institute a proceeding, and the initial determination as to whether to convene a proceeding is made by the Director. (The Director's decision, of course, is subject to Commission review.) Utilization of the procedures under § 2.206

for determining if a hearing should be held on whether a plant complies with the combined COL was favored as the proper procedure by all but one member of the Commission Ad Hoc Committee and was recommended by the Ad Hoc Committee. (Report of the Ad Hoc Committee, December 15, 1982, p. 11).

In sum, the safety determination that a plant is designed and can be constructed and operated in conformance with the conditions of the license should be made by the Commission when the single-stage license is issued. The issuance of that license will be based on extensive Commission review and will come only after opportunity for public hearing.[2] Such review, together with inspections and tests made by the Commission during construction to verify that the construction conforms to the COL and that other pre-operational requirements have been met, is entirely adequate for the NRC to provide reasonable assurance of the public health and safety and common defense and security. There should be no further "proceeding" prior to commencement of operation and no hearing at that time. The proposed legislation and accompanying analysis should be explicit in this regard if single-stage licensing (with the resources committed in reliance thereon) is to be a reality.

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[2] The proposed amendment in both the NRC and DOE bills to Section 189 of the AEA would eliminate the present requirement for a mandatory hearing even if no hearing is requested by a member of the public. We support this proposal.

The Hearing Process - Hybrid Hearings

Another important aspect in reform of the licensing and hearing process is the provision for hybrid hearings contained in both the NRC and DOE proposals. Both NRC and DOE agree that hybrid hearings, involving an informal public hearing followed by an opportunity for a formal evidentiary hearing, are desirable. However, whereas the proposed DOE bill would mandate hybrid hearings (DOE Proposal, § 103, adding new §§ 189a(2),(3),(4) and (5) to the AEA), the NRC bill would authorize, but not require, the Commission to conduct such hybrid hearings. (NRC Proposal, § 102, adding new § 189b, c and d to the AEA). We support the concept of hybrid hearings and favor the DOE approach of mandating the use of such hearings.

As presently conducted, nuclear licensing hearings lack a clear purpose and attendant focus, generate unnecessary costs and delays in the licensing of facilities and divert scarce technical resources of both the Commission and the industry from safety-related activities. In this regard, we are encouraged by the recognition in the Commission proposal that the purpose of the hearing "is to resolve issues of fact in dispute between the parties to the proceeding." (NRC Proposal, § 2(a)(ii)). In our view, however, the present trial-type hearing serves neither the purpose of meaningful public participation nor that of sound decision-making or resolution of issues of fact on safety issues.

Although we believe that the Commission presently possesses legal authority to adopt a more flexible and less formal hearing process, legislation is advisable as a practical matter. Despite early indications of the Joint Committee on Atomic Energy as to the desirability of informal procedures, the AEC and NRC consistently have conducted all licensing hearings with a trial-type format, and the present Commission entertains doubt as to its latitude for a marked departure from trial-type hearings. In these circumstances legislation specifically mandating the hybrid hearing process is plainly in order if that hearing process is to be pursued with assurance that its validity will be sustained in any judicial challenge.

The approach in the NRC bill which authorizes but does not mandate the use of hybrid hearings is troublesome from the standpoint of licensing practicality. While it might be desirable conceptually to custom-tailor hearing procedures for individual proceedings, we see in such a process offsetting disabilities of a hearing process which is unpredictable and vulnerable to judicial contest and reversal. The proposed NRC formulation is likely to increase the confusion surrounding a requisite hearing procedure and will lead to a great reluctance on the part of the Commission or any applicant to depart from the formalistic trial-type hearings to the unknown of discretionary hybrid hearings. In our view, the hybrid hearing process should be expressly required in reform legislation, and such authorization should apply to all licensing proceedings. (Adjudicatory proceedings should be retained, of course, with respect to enforcement proceedings, in keeping with the precepts of due process.)

The central precept of the hybrid hearing process is that the Commission would provide adjudicatory-type procedures only where a party has raised a genuine and substantial dispute of fact, the resolution of which is likely to be essential to the licensing decision, and where the issue can be resolved with sufficient accuracy only through adjudicatory procedures.[3] Such a hearing process has garnered impressive support from those concerned with nuclear licensing and its problems, as well as from advocates of general agency reform. It already has been included in the recently enacted Nuclear Waste Policy Act of 1982 (§ 134), and has been proposed in the more broadly applicable Regulatory Reform Act of 1983 (H.R. 2327). Accordingly, we believe the reform legislation should mandate hybrid hearings.

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[3] One of the purposes of the NRC proposal is "to assure that adjudicatory procedures are invoked only where a relevant dispute only can be resolved with sufficient accuracy through such procedures. (NRC Proposal, § 2(b)(4)).

Early Site Review and Approval

Both the NRC and DOE proposals contain provisions which would create statutory authority for issuance of early site approvals and would confirm and strengthen existing Commission practice of conducting an early site review at the request of an applicant. (NRC Proposal, § 103; DOE Proposal § 104 (each adding new § 193 to the AEA)). We strongly endorse and support the concept of early site approval.

The NRC proposal provides for deferral of payment of fees otherwise payable on application filing or issuance of an early site approval (Proposed § 193b). The costs that would have been defrayed otherwise by the fees would be allocated to license applicants who propose to use the approved site. If no application for such use is filed within the initial ten-year period of the site approval, the fee would be payable by the applicant for the site approval. No similar provisions are contained in the DOE proposal.

We support the NRC concept of deferral of fees since we strongly believe that such deferral provides an important incentive to the investment of resources necessary to obtain early site approval. We also support the Commission proposal wherein the legislation would provide merely for deferral of fee payments, leaving to the Commission the determination of payment and allocation of deferred licensing fees.

Both the NRC and DOE proposals (Proposed § 193d(2)) provide for renewal of an early site approval for periods beyond the initial ten-year period. In this regard, we prefer the DOE approach wherein such renewal is to be granted unless the Commission finds that significant new site information has become available which makes it likely that the site will not comply with the Act or Commission regulations (Proposed § 193d(2)(B)). In order to promote predictability and stability in the licensing process, this presumptive renewal of an early site permit following its initial ten-year term, subject to the significant new information requirement, is desirable. The renewal should not be an occasion to re-review issues resolved prior to issuance of the original site permit, as may be the case in the Commission's formulation of the renewal standard (Proposed § 193d(2)). At the end of the initial term, the NRC should review the site permit in light of any significant new information relative to the site. It should not, however, require changes to the permit, either during its effective term or upon review for renewal, unless it determines that such changes are necessary under the Commission's backfitting standard.

The DOE proposal states (Proposed § 193d(1)) that a site permit "shall be conclusive" with respect to a facility for which a license is filed utilizing such site. In contrast, the NRC proposal (Proposed § 193d(1)) provides that the site permit "may be referenced" in an application for a construction permit or combined COL. The NRC section-by-section analysis states that the effect of this provision is that matters resolved in the site permit review or licensing action will not be modified or re-examined as part of the later construction permit or COL review unless a substantial evidentiary showing is made. We believe in this regard that the DOE language better states the intent. Further, as noted above, challenge to the conclusiveness of a site approval only should be permitted in conformance with Commission backfit procedures.[4]

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[4] This recommendation also was made by the Commission Ad Hoc Committee (Ad Hoc Committee Report, December 15, 1982, p. 20).

Under the DOE proposal (Proposed § 193e), approval would be granted under certain conditions for limited construction activities to be performed at a site where an early site approval has been granted and an application for a construction permit or a combined construction permit and operating license is pending. No similar provision is contained in the NRC proposal. We believe that the limited work authorization system currently embodied in Commission regulation provides a satisfactory means for authorizing limited construction activities of the type which appear to be addressed in the DOE proposal. Accordingly, we do not believe it necessary for the legislation to include this transition provision.

Approval of Designs

Both the NRC and DOE proposals (NRC Proposal, § 104; DOE Proposal, § 105 (each adding new § 194 to the AEA)) authorize the Commission to allow for approval of nuclear power plant designs whether or not a construction permit or a combined COL has been filed. We strongly endorse and support authorization for approval of designs independent of the CP or COL application.

The recognition accorded by the Commission to the benefits to be derived from standardized designs is particularly appropriate. Thus we concur with the proposed

Commission findings that licensing and construction will be faciliated and public health and safety "enhanced by the use of pre-approved nuclear power plant designs, particularly standardized designs" (Proposed Finding No. 4, § 2(a)(4)) and the Commission finding of a need to encourage development and use of standardized nuclear power plant designs because such designs can benefit public health and safety by concentrating resources, by stimulating standardized programs of construction practice and quality assurance, by improving training of personnel, by fostering more effective maintenance and improved operation and by permitting more effective and efficient licensing and inspection (Proposed Finding No. 5, § 2(a)(5)).

The Commission proposal would authorize approval of the standardized facility designs or the design "for any major subsystem which represents a discrete element" of a nuclear facility (Proposed § 184(a)). We support the idea that to achieve the maximum benefit the design approval concept should be applicable to less than an entire plant. We believe that the proposed legislation should be broadened to permit standardized design approval for an entire nuclear power plant, major portions of the plant (e.g., nuclear steam supply system, nuclear island, balance of plant, etc.) or any important component part as defined by the Commission. The AEA currently authorized licenses for production and utilization facilities, and in Sections 11(v) and 11(cc) the AEA defines production and utilization facilities to include "any important component part especially designed for such equipment or device as determined by the Commission." The flexibility inherent in this definition should be retained in the design approval provision.

In at least one respect we believe the Commission proposal with respect to approval of design to be too restrictive. The Commission proposal defines the term "standardized design" to mean a design which "is sufficiently detailed and complete" to support licensing or approval, of a facility or a major portion of such facility (NRC Proposal, § 202). According to the section-by-section analysis, the Commission contemplates "development and use of substantially complete standardized designs." Unless the term "substantially complete standardized designs" means something different than "final design," the suggestion that design approval requires substantially complete standardized designs is inappropriate. As indicated earlier in my testimony certain details with respect to a standardized design are not necessary for the Commission to make the safety determinations required to grant a design approval. Here again, what is necessary is a degree of information sufficient to enable the Commission to determine whether a plant, if built in accordance with an approved design, can operate without undue risk to the public health and safety or common defense and security.

Deferral of licensing fees is applicable to and appropriate for design approvals. In this regard, both the NRC proposal (Proposed § 194b) and the DOE proposal (Proposed § 194c) include fee deferral. As noted in our comments with respect to early site approvals, we believe deferral of licensing fees will act as a strong incentive to standardization, and we support the NRC and DOE proposals.

As in the case of early site approval, we prefer the DOE approach to the NRC approach with respect to renewal of design approvals. In order to promote predictability and stability in the licensing process, renewal of design approval should be presumptive. At the end of the design approval period, the NRC should review the design approval in light of any significant new information relevant to the design approved. The NRC should not, however, require any changes in the design approval, either during its effective term or upon review for renewal, unless it determines such changes are necessary under the Commission's backfitting standard.

The Commission proposal with respect to approval of designs states that any approval may be "referenced" in a later licensing proceeding involving such approved design

(Proposed § 194(d)(1)). In contrast, the DOE proposal makes an approved design "conclusive" with respect to an application for a construction permit or a COL which meets the conditions of the approval (Proposed § 194(d)(1)). As in the case of early site approval, we understand the intent of the Commission to be the same as that of the DOE despite the difference in language, since the section-by-section analysis of the Commission states that all matters resolved in connection with design approval can be used without need of re-review except in connection with a substantial evidentiary showing. We believe the DOE language is preferable to properly reflect the legal effect which the approval should have. Use of the word "conclusive" will make it clear that issues relative to the design of a facility may not be re-reviewed or raised when a plant design approval is utilized in connection with a license application.

The Commission proposal authorizes a variance from one or more elements of a design approval if it is determined that the variance will comply with the AEA and Commission regulation (Proposed § 194(g)). The variance would be limited to the particular license for which the variance has been requested. Although such a variance provision is desirable, we do not believe the Commission proposal is adequate. Provision should be made to allow deviations from a design approval without prior Commission approval unless such deviations involve a change in the technical specifications incorporated in a license or an unreviewed safety question. In this regard we support the provisions contained in the DOE proposal relating to amendments and deviations at the request of a permit holder (DOE Proposal, § 106, adding a new § 195 to the AEA).

Certification of Need for Power

The Commission proposal contains provisions relating to reliance by the Commission upon federal, regional or state certification of need for the facility and of the alternative sources of generating capacity (NRC Proposal, § 185c). Under the Commission bill, such reliance would be required if the Commission receives a verification from the certifying authority with respect to certain matters spelled out in the proposed statute, including certification that procedures used by the certifying authority substantially are equivalent to those used by the Commission. Under the DOE proposal (DOE Proposal, § 185d), certification also is provided, but no standard similar to that contained in the NRC bill is expressed.

While we support the elimination of duplicative decision-making by government agencies and believe the approach taken by the NRC and DOE proposals is sound, we do not believe it is appropriate to address this issue in a general nuclear licensing reform bill. The question of the appropriate interplay between state decision-making and the Commission in this area is but a small part of a broader question of federal-state relationships. We believe this subject is more appropriate for consideration in separate legislation. With respect to the actual NRC proposal, we are especially opposed to the provisions which suggest that unless another federal agency or a state or region has substantially adopted Commission procedures and has provided judicial review of compliance with those procedures a certification by such group is invalid.

NEPA

We oppose those provisions in the proposals which introduce the National Environmental Policy Act of 1969 (NEPA) into the organic statute of the NRC. In this regard, while we believe that consideration of the environment under NEPA is an important factor in nuclear licensing as in all major federal actions significantly affecting the environment, we do not believe it is appropriate to amend, add to or detract from NEPA by means of nuclear licensing legislation. Thus, we believe that references in the proposed legislation to NEPA and to consideration of the environment should be deleted.

Mr. Chairman, I appreciate the opportunity which the subcommittee has afforded me to testify on S.893 and S.894.

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JO ANN HALLER
JOSEPH A. NAPOLI

September 10, 1983

Honorable George J. Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell:

In your letter to me dated July 20, 1983, you asked for specific instances where the hearing process has delayed a nuclear power plant's operation or instances of unnecessary backfitting.

Determination of the cause of delay in commencement of nuclear plant operations is complex, and frequently there are multiple factors involved. Accordingly, it is difficult to single out particular plants and establish with certainty that hearing delays constitute the sole cause of delayed operation. Among other factors which contribute to delay are delays in completion of NRC Staff licensing review and delays in actual construction operations. As an attorney who has attempted to establish responsibility for delays in the context of civil litigation in breach of contract actions in federal court, I am aware that any claim of causation for delays is difficult to prove. Thus, it can be anticipated that claims of delay due to the licensing hearing process will be challenged by pointing to other factors which may have given rise to the delay.

There are numerous instances when conduct of a hearing has awaited completion of Staff review and issuance of necessary Staff documents. In at least one case an Atomic Safety and Licensing Board, frustrated by repeated delays in issuance of Staff documents needed to continue hearings, ordered the Staff to publish certain documents on the dates previously committed to by the Staff for such publication. The delay involved was over two years. The Staff successfully appealed the Order to the Atomic Safety and Licensing Appeal Board on the ground that it was beyond the authority of a Licensing Board to order the Staff to publish any document by a particular date, even where such date had been established initially by the Staff. It is noteworthy that the Appeal Board found that delays indeed had been incurred, and "the Licensing Board's conducting of a public hearing . . . has been delayed accordingly." Elsewhere the Appeal Board noted "the proceedings here hardly exemplify timeliness." In the Matter of Offshore Power Systems (Floating Nuclear Power Plants), ALAB-489, 8 NRC 202, 204 (1978).

Further, delays in plant operations do occur as a result of construction delays. However, the pace at which construction of a plant proceeds often is determined by the pace at which the Nuclear Regulatory Commission licensing review proceeds or, indeed, by the NRC's estimate as to when a license may be expected. Thus, work schedules may be stretched out in response to slippage in NRC licensing schedules. When it becomes obvious that the necessary NRC operating license will not be forthcoming until a given date, it is not surprising that the utility will stretch out its construction schedule so as not to have a plant complete and sitting idle awaiting a license. In such cases, when the license ultimately is issued, it appears that no licensing delays occurred when, in fact, construction completion could have been at an earlier time. Thus, there is a distinction between determination of when construction can be completed and the rescheduling of a construction completion date for reason extraneous to the construction itself. It is the former determination that is important when attributing cause for delay. This matter of the relationship between hearings and construction schedules is further discussed in Mr. William S. Lee's letter to you dated August 24, 1983, responding to your July 20, 1983 letter to him.

Despite the difficulties discussed above of establishing causation for delays, there clearly have been instances where the licensing process has delayed operation of nuclear power plants. One example of such delay was with respect to the San Onofre Nuclear Generating Station, Units 2 and 3. In a letter dated March 6, 1981, from Mr. William R. Gould, Chairman of the Board of Southern California Edison Company, to President Reagan with respect to those plants, Mr. Gould stated:

> "In just the past year, initial operation of San Onofre has been rescheduled twice, with a total delay of eleven months . . . These delays are solely attributable to delays in the licensing process."

In early 1981, hearings on nuclear power plant delays were held by a subcommittee of the House Committee on Government Operations. Monthly reports from the NRC to a House Appropriations Subcommittee at that time indicated that a number of plants faced potential delay in operation as a result of the failure of the licensing process to be completed in a timely fashion. According to the statement of Dr. Joseph M. Hendrie, the Acting Chairman of the Nuclear Regulatory Commission, on June 18, 1981:

> ". . . we now face a situation in which for the first time a significant number of plants will be complete and ready to operate before the completion of required adjudicatory hearings."

One of the plants cited by Chairman Hendrie was San Onofre. All plants cited by Chairman Hendrie involved contested hearings. Substantial controversy surrounded the accuracy of the delay estimates and the causes of the delays then being projected. In fact, some of the delays then projected to result from construction completion being ahead of completion of the hearing process were not encountered. Other events, generally unique to each facility, required a setting back of dates for initial operation of some plants. However, certain of the delay was real, and any delay which leads to higher consumer costs should be eliminated whenever possible.

Delay in the licensing process also impacts in other ways. For example, delay has been a contributing factor in the cancellation of certain nuclear power projects. This was suggested in a letter from Mr. Martin E. Fate, Jr., President of Public Service Company of Oklahoma, to Mr. Harold R. Denton, Director, Office of Nuclear Reactor Regulation, Nuclear Regulatory Commission, dated February 16, 1982, when Mr. Fate, in announcing cancellation of Black Fox Nuclear Power Station, Units 1 and 2, attributed delays and uncertainty of the licensing process as one reason for termination of the project.

Another measure of delay is to compare the length of time required to bring plants involved in heavily contested licensing proceedings on line with the length of time for construction required for plants with uncontested or lightly contested proceedings. Although I do not have specific figures available, I believe a study would show that plants involved in heavily contested licensing proceedings take substantially longer to complete than plants which do not face such contests. This does not lead me to conclude that hearings should not be part of our regulatory scheme. Rather, the point to be made is that such hearings should be a disciplined process which does not lead to situations where plants sit idle while hearings are completed.

Perhaps the most striking example of a plant operation being delayed by licensing hearings involves the case of Three Mile Island Unit No. 1. At the time of the TMI accident in March 1979 (which involved TMI Unit No. 2), TMI-1 was down for refueling. That plant was undamaged and physically unaffected by the accident. The Commission issued an Order in August 1979 to shut down TMI-1, and conduct a public hearing. At the time of the Order, the Commission stated its intention to complete these restart proceedings in nine months. Over four years have now gone by, and the NRC is still conducting proceedings on whether to permit TMI-1 to restart. Other reactors of similar design to that of TMI-1 have continued to operate throughout the country, and there appears to be little justification for the protracted hearing process which TMI-1 has been forced to undergo. Again, it is not the hearing which is objected to, but the length of time which they have consumed. Although the TMI-1 example is unique and not likely to be repeated, it points out in dramatic fashion how a plant can sit idle while the hearing process proceeds.

With regard to backfitting, there are a number of examples of backfits imposed by the NRC which either were unnecessary, or where justification cannot be established or denied because no rational, systematic evaluation was performed prior to their imposition. Such examples have been provided you in the letters of Messrs. William S. Lee of Duke Power Company, James S. Moore of Westinghouse Electric Corporation, A. Philip Bray of General Electric Company, and W. J. L. Kennedy of Stone & Webster Engineering Corporation. The President's Private Sector Survey on Cost Control and NUREG-0839 attached to Mr. Lee's and Mr. Moore's responses also contain such examples. I believe what needs to be stressed with respect to reform of the backfitting process is the need to put into place a disciplined process, with appropriate standards and procedures, for determining when and whether backfitting should be required.

In addition to the matters raised in your letter to me of July 20, 1983, you submitted five additional questions to witnesses who testified on behalf of the nuclear industry at the June 14, 1983 hearing. Those questions have been fully and completely addressed by the letters of Messrs. Lee, Moore, Bray and Kennedy. From my perspective, however, as a lawyer who has been involved in more than thirty NRC licensing proceedings, as well as in extensive civil litigation in the federal courts, I would like to add an additional comment with respect to the hearing process.

It is by no means clear to me that the adjudicatory trial-type process currently used in Nuclear Regulatory Commission licensing proceedings produces the best or most reasoned decisions with respect to safety. Technical decisions in the nuclear power area, as in most other areas of complex technology, involve engineering judgments and tradeoffs. Information in licensing proceedings spans numerous technical disciplines. In this type of situation, my experience is that cross-examination almost always fails to lead to a constructive technical dialog. Errors or weaknesses in expert testimony seldom, if ever, are brought out by intervenors in NRC hearings, and the whole process is generally foreign to the scientists and engineers who view the process as fruitless at best and demeaning at worst.

Another aspect of the Nuclear Regulatory Commission practice helps demonstrate this point. Every license application for a power reactor is required to be reviewed by the Advisory Committee on Reactor Safeguards (ACRS), a fifteen-member advisory committee made up of distinguished members of the technical and scientific community. Their proceedings, although non-adversarial, provide some of the most rigorous probing into the safety of nuclear power facilities that is encountered in the entire licensing process. The ACRS has been responsible for much more indepth probing into the proposals of applicants and reviews by the Staff than is found in the trial-type licensing process utilized by the Atomic Safety and Licensing Boards.

Sometime ago Professor Harold P. Green of The George Washington University National Law Center, who has represented intervenors in the NRC licensing cases, observed:

> "Public hearing procedures and the availability of intervention in nuclear power licensing appear to be primarily cosmetic devices, providing the illusion but not the reality of public

> participation in the process. The illusion, moreover, is maintained at substantial and unnecessary economic cost to the applicant, the government, and intervenors, resulting in at most minimal contributions to the safety aspects of nuclear power, public confidence in the licensing process, and the credibility of the AEC." ("Public Participation in Nuclear Power Plant Licensing: The Great Delusion," Harold P. Green, 15 William and Mary Law Review 517 (1974)).

What Professor Green wrote in 1974 remains true today. His further comments that 'it is tantamount to heresy to advocate that the availability of public hearings as a forum for public participation be curtailed rather than expanded" also remains true.

The hybrid hearing process proposed in both the DOE and NRC bills would limit adjudicatory trial-type hearings to those cases where a genuine and substantial dispute of fact exists which can be resolved with sufficient accuracy only by taking evidence in an adjudicatory proceeding. I believe such a hybrid hearing process would mark a significant step forward in NRC licensing. Public participation in hybrid hearings initially would involve both the opportunity of the public to present views and issues to a hearing board and the opportunity for discovery. In addition, the Commission in the non-trial-type phase of the hybrid hearing process could establish procedures for questioning of witnesses by the hearing board itself. In this manner only those factual determinations which cannot properly be made except through trial-type adjudication would be subject to the trial-type procedures.

The position taken by Professor Kenneth Culp Davis that not all factual disputes warrant trial-type procedures is correct. In the 1982 Supplement to his Administrative Law Treatise, Professor Davis states:

> "The pervasive error over the last three or four decades has been the tendency of the legal system to assume that any question which is even slightly-factual may best be resolved by trial procedure. The Supreme Court's push away from trial procedures . . . is fundamentally sound, should be heeded, and should be developed further."

I believe the time has come to recognize that it is not possible or desirable to bring to the administrative process all of the trappings of trial-type hearings if the goal of the process is to render the best possible safety decisions, and in so doing to bring out to the fullest extent expert views and opinions. Thus, I strongly support the hybrid hearing proposals for licensing reform.

I appreciate the opportunity to comment on these matters. Please let me know if I can be of further assistance.

Sincerely,

Barton Z. Cowan

Barton Z. Cowan

Cambridge Reports, Inc.

675 Massachusetts Avenue, Cambridge, Massachusetts 02139 Telephone (617) 661-0110

National Nuclear Licensing Survey

This memorandum highlights results from a recent national survey* on public attitudes toward federal licensing and regulation of nuclear energy plants. The survey was designed to meet the following three objectives:

- To gauge voter awareness and understanding of present federal government procedures for licensing and regulating nuclear power plants;
- To determine voter attitudes about the adequacy of government regulation of nuclear power plants;
- To identify levels of voter support and opposition to several proposals for changing federal procedures for licensing and regulating nuclear power plants.

Overall, we find American voters to be well informed about the federal government's regulation of the nuclear power industry, and also moderately critical of the government's performance in this area. Voter understanding extends even to accurate knowledge about the government's role in evaluating specific stages in the construction and licensing of nuclear power plants. Although voters are likely to give the federal government moderately negative marks on regulating the nuclear industry, they are also more likely to say that regulation of the nuclear power industry is still better than regulation of other American industries. In light of these levels of voter understanding and opinion, we find widespread voter support for a number of changes in the way nuclear power is presently regulated. A summary of the most important results from this survey is presented on the following pages.

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* Methodology: This analysis is based on a national public opinion survey conducted by Cambridge Reports, Inc. between May 18 and May 26, 1983. The survey consisted of telephone interviews with a representative sample of 1000 registered American voters.

Understanding of nuclear power plant regulation

The federal government's role in the regulation of nuclear power plants is well known to American voters. Close to nine out of ten voters (89%) presently know that the federal government regulates the nuclear power industry. By comparison, only 76% of all voters know that the banking industry is regulated, and even fewer voters know that the oil (69%) and retail (41%) industries are regulated.

In line with widespread knowledge that the nuclear power industry is regulated by the federal government, we also find that a large majority of voters know federal licenses are needed before electric utility companies can build and operate a nuclear power plant. More than four out of five voters in our sample (84%) know a federal license is needed before utilities can run a nuclear power plant. Only 8% of all voters think federal licenses are not needed, while the remaining 7% aren't sure whether a license is needed or not.

American voters are also likely to be well informed about particular aspects of the federal government's regulation of nuclear power plants. We presented respondents with several steps in the design, construction, and operation of a nuclear power plant and asked whether each step is in fact evaluated by the federal government. Majorities of our sample, in each case, correctly said the federal government does in fact evaluate that step. The following are some of the results from this series of questions:

- The largest number of voters (72%) know that a nuclear power plant's design and construction are evaluated for safety by the federal government;
- Federal evaluation of a nuclear power plant's environmental impact is second most widely known (65%), and tied by essentially the same number (64%) who know that federal regulators evaluate the need for a nuclear power plant;
- The fewest voters know that the federal government evaluates the training given to nuclear power plant operators (51%) and the competence of a utility's management to operate a nuclear power plant (52%).

Along this same vein, we find that a sizable majority of voters (79%) correctly know that federal authorities can order the shutdown of an operating nuclear power plant in order to make changes in the plant's design or construction. Only one out of seven voters (14%) think federal authorities cannot order such a shutdown.

We also asked respondents whether the regulation of nuclear power plants is more or less strict than regulation of other types of power plants. Perceptions of this issue are more mixed, but a plurality (44%) believe nuclear power plants are regulated more strictly. Twenty-six percent of the sample believe nuclear power plants are regulated just as strictly, while an equal number believe nuclear power plants are regulated less strictly than other types of power plants.

Given the extensiveness as well as accuracy of public knowledge about federal regulation of the nuclear power industry, it is interesting to see in the survey that voters are not equally well informed about how much time it takes to plan and build a nuclear power plant. The most commonly estimated time it takes to go from planning to operating a nuclear power plant is 4 to 6 years, mentioned by a plurality of three out of ten voters. Excluding the one-tenth of all respondents who say they don't know how much time is needed, the median estimate is 6.4 years.

After informing respondents in the questionnaire that the actual time needed is 12 or more years, we then asked them why they think it takes this long. The most commonly cited reasons in this open-ended question are as follows:

- "Government regulation and red tape," mentioned by 37%;
- "Concern for safety" or "safety regulations," mentioned by 19%.

Evaluation of nuclear power plant regulation

Responses to a pair of questions asked only of those who know that the federal government licenses nuclear power plants reveal some public dissatisfaction with the government's efforts to regulate nuclear power. The first of these questions asked respondents to evaluate the federal government's job of regulating nuclear power, and the second asked respondents to compare this regulation of the nuclear power industry with the federal government's regulation of other industries. Responses to this pair of questions indicate the following:

- Of the 84% of all voters who know that the federal government licenses nuclear power plants, three-tenths judge this regulation of nuclear power as excellent (4%) or good (25%). A plurality of this group judge the government's regulatory efforts as only fair (45%), with an additional 24% judging these efforts as poor;
- Even so, a plurality of this group also judge federal regulation of the nuclear power industry as somewhat or much better (47%) than regulation of other industries, while a smaller group (37%) feel this regulation of nuclear power is somewhat or much worse than regulation of other industries.

On balance, while voters express some criticism of federal regulation of nuclear power, they still see this regulation as being somewhat better than regulation of other industries.

Opinions about possible changes in nuclear power plant regulation

When asked their opinions about a number of possible changes in federal regulation of nuclear power, a majority of voters in each case support the specific proposal discussed in the question. Responses to this series of questions show the following:

- The most widely supported change, favored by 93% of our sample, is to have federal regulators consider the overall impact a new regulation will have on nuclear power plant safety before they order such changes;
- The second highest support (85%) is for a proposal to institute earlier, one-step licensing hearings rather than the existing, two-step hearing process;

- Close to the same number of voters (83%) support a proposal to permit governmental approval of particular locations for nuclear power plants before utility companies actually decide to build plants on those sites;

- The fourth most popular proposal, endorsed by 82% of our respondents, is a shortening of the licensing process if it means consumers would pay lower electric bills as a result; essentially the same number of voters (81%) favor a shortening of the licensing process if it would not reduce the overall safety of nuclear power plants;

- Four out of five voters (80%) favor a proposal to make public licensing hearings less formal and courtlike;

- Almost four out of five voters (79%) favor having federal regulators consider the cost to consumers when ordering a change in the regulations on nuclear power plant design or construction;

- Finally, 77% of our voter sample favor allowing the federal government to pre-approve standard nuclear power plant designs.

Nuclear Licensing Survey

1000 Americans interviewed

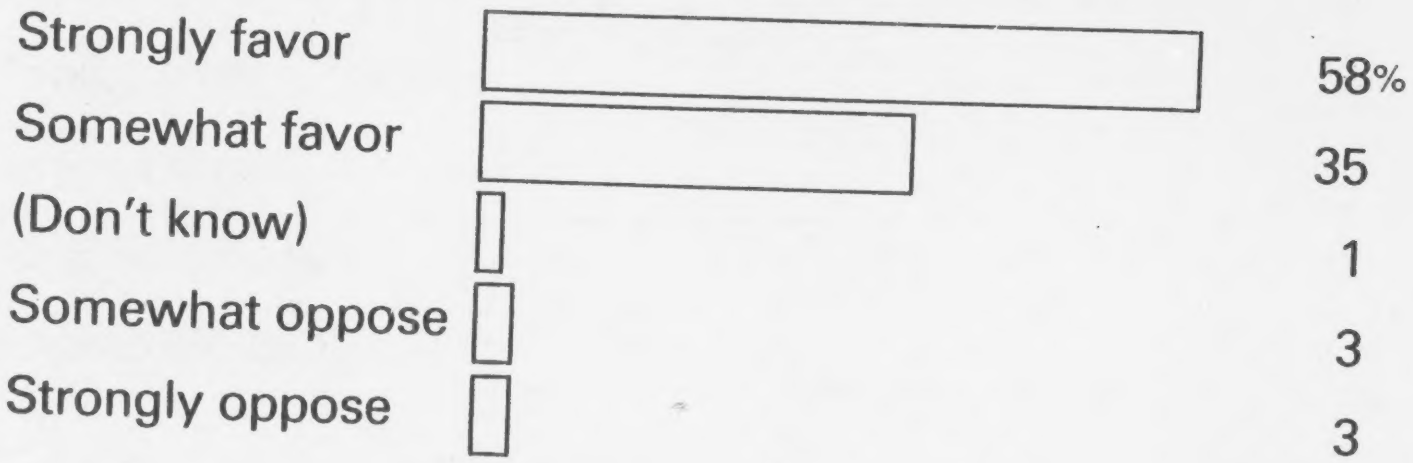
Interviewing conducted May 18 to May 26, 1983

Eighty-four percent of all voters know that a federal license is needed to operate a nuclear power plant.

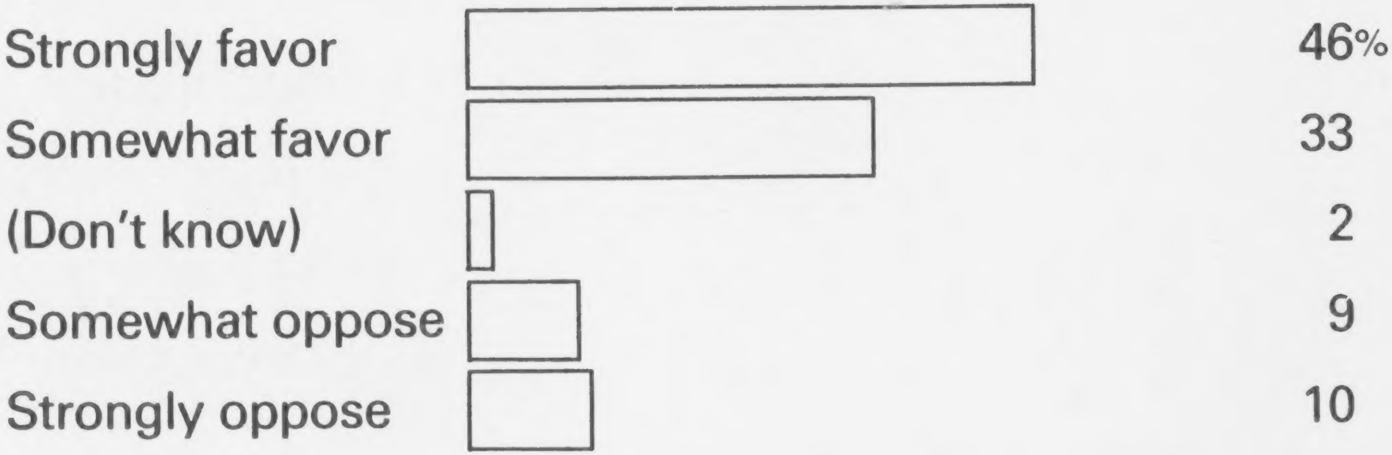
Only 44% of all voters think nuclear power regulation is more strict than regulation of other power plants.

Of those knowing about federal licensing, only 29% believe federal regulation of nuclear power is excellent or good.

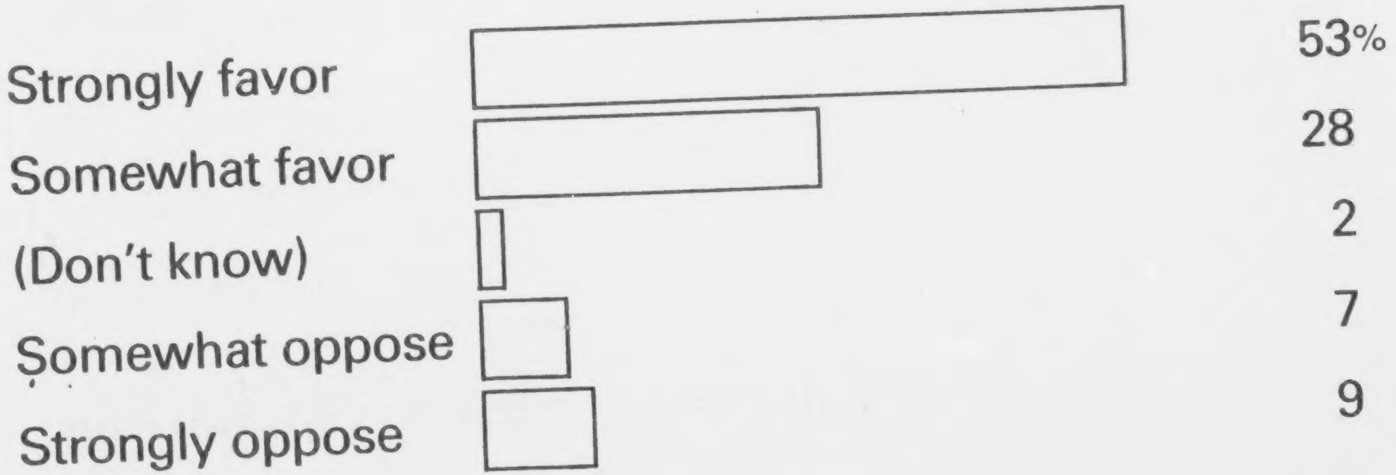
Weighing changes against overall plant safety



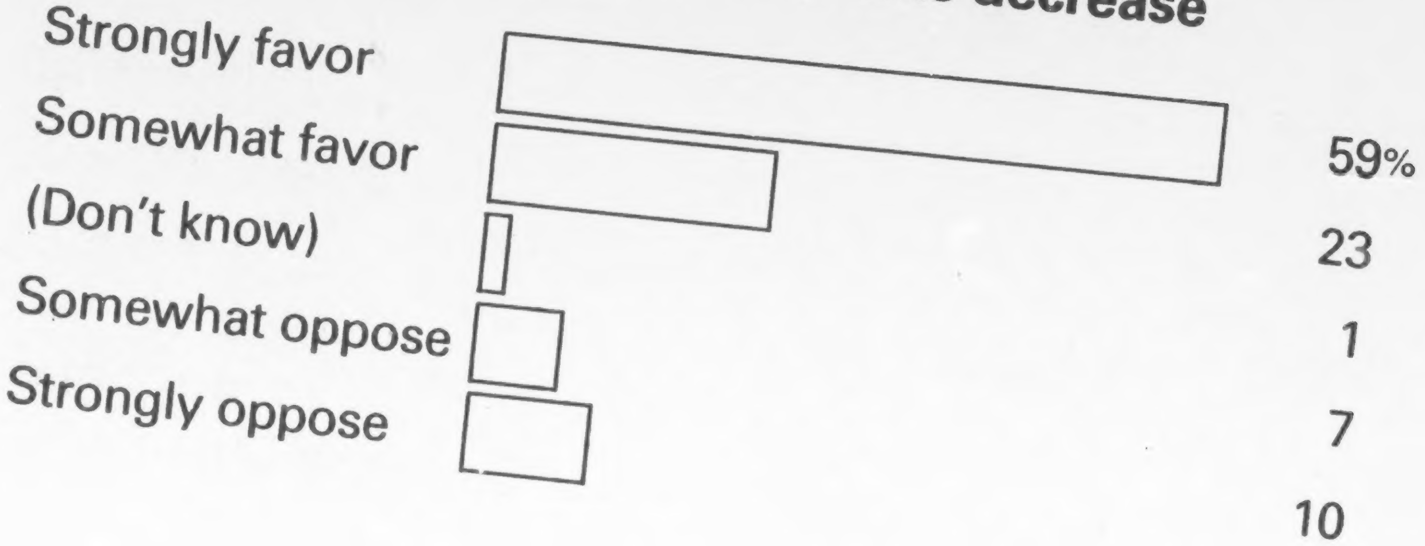
Weighing changes against cost to consumers



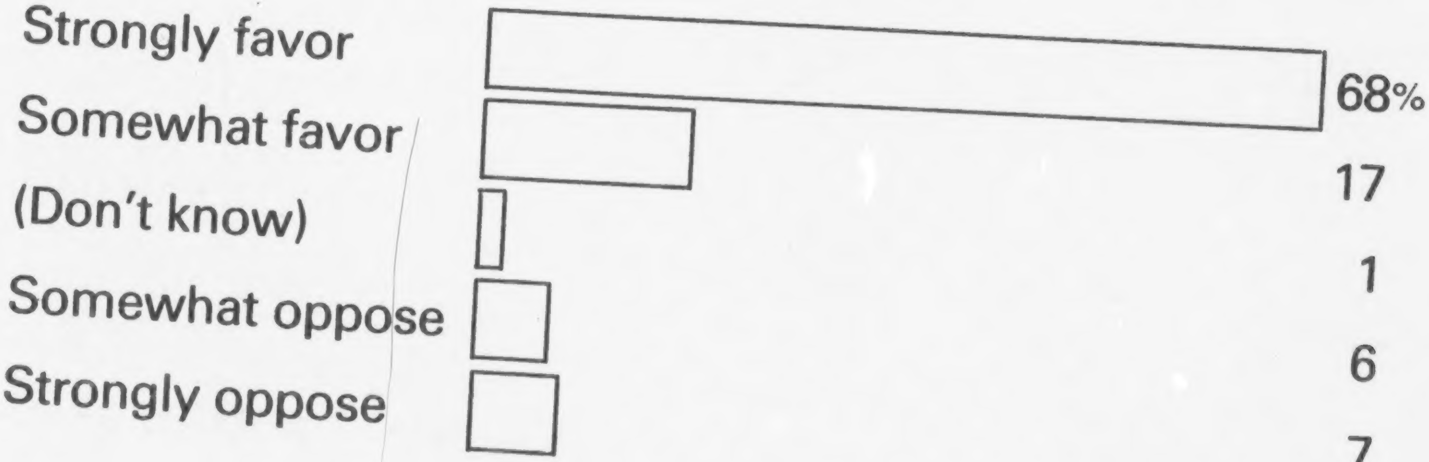
Shortening licensing period without safety reduction



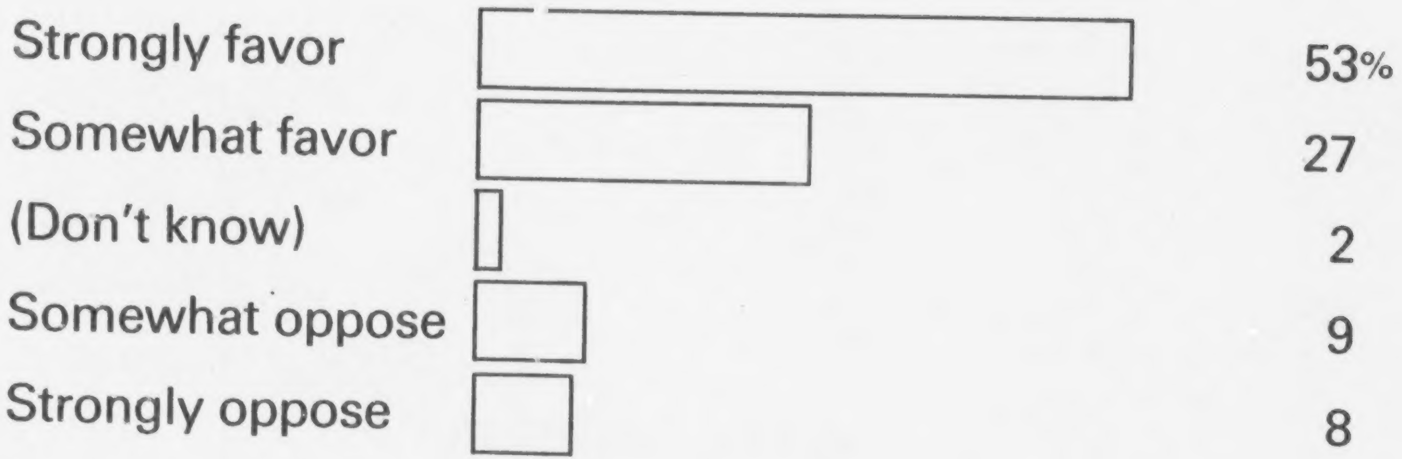
Shortening licensing period if bills decrease



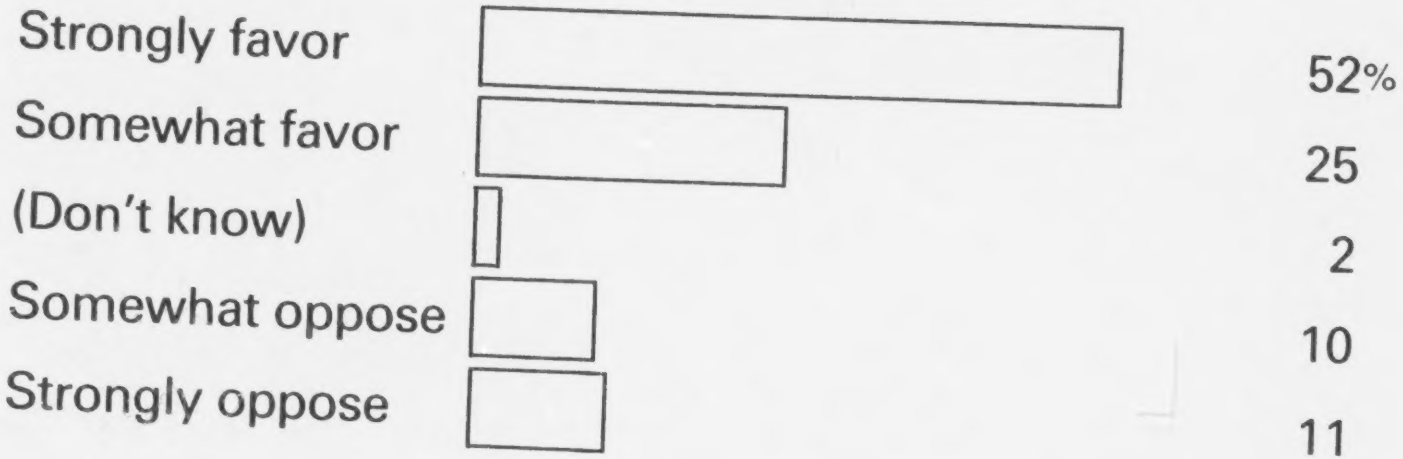
Earlier, one-step licensing hearing



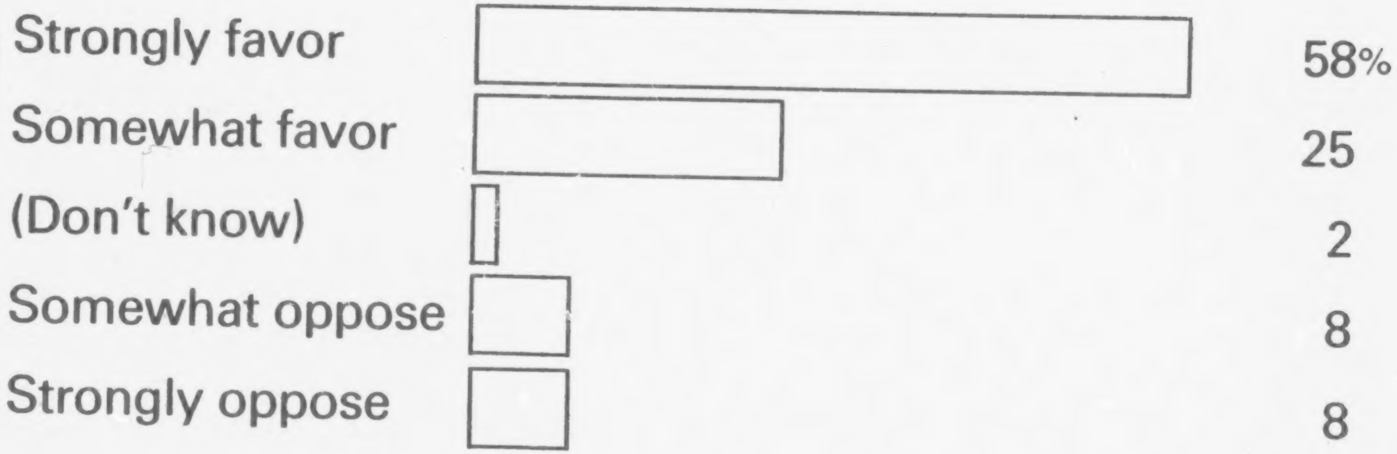
Less formal hearings



Pre-approval of standard designs



Early site approval



STATEMENT
OF
A. PHILIP BRAY
VICE PRESIDENT AND GENERAL MANAGER
NUCLEAR POWER SYSTEMS DIVISION
GENERAL ELECTRIC COMPANY

Mr. Chairman and members of the subcommittee:

I am A. Philip Bray, Vice President of the General Electric Company and General Manager of its Nuclear Energy Power Systems Division, located in San Jose, California. Since 1977, I have been responsible for managing GE's contracts for boiling water reactor business, both here in the United States and overseas. I am also responsible for licensing of boiling water reactors. GE has been one of the principal manufacturers of nuclear power plants since the advent of commercial nuclear power. My own involvement with the nuclear industry spans more than 27 years.

I am honored to be here today to testify, on behalf of General Electric, on the nuclear licensing reform proposals contained in S. 893 and S.894. These bills -- introduced at the request of the Nuclear Regulatory Commission and the Department of Energy, respectively -- are of great importance to the sound functioning of the nuclear licensing process, to the future of commercial nuclear power generation and, because of that, to the future well-being of our nation.

We at GE believe that the country's economic growth will require significant additional electrical generating capacity, and that nuclear power necessarily will supply a substantial part of that capacity. There is widespread agreement, however

-- not only in the nuclear industry but among Government policymakers and regulators -- that the present licensing and related regulatory process no longer corresponds with nuclear energy's stage of technical development or its role in our industrial economy. The process is unstable in its requirements, unpredictable in its application, and provides for public participation at a point in time and manner which ill serves public, industry or regulatory needs. These shortcomings are so serious -- and the consequent planning and cost uncertainties are so great -- that, regardless of how impressive nuclear power's safety record may be, or how economically competitive nuclear power may prove, no utility can be expected to commit itself to nuclear power projects in the foreseeable future. While administrative reform provides a partial response -- and should be pursued aggressively by the NRC -- many of the problems can be effectively dealt with only through basic legislative changes.

We see such legislation as having four fundamental and mutually supporting aims: to permit more effective application of industry and NRC safety resources; to improve the quality of regulatory decisions; to reduce unnecessary costs; and to enhance the effectiveness of public participation. In this regard, GE endorses the previous statement of Bill Lee on behalf of the Edison Electric Institute, the Atomic Industrial

Forum, and the American Nuclear Energy Council. In his prepared statement, Mr. Lee sets forth a thorough analysis of the need for reform legislation and the necessary elements of meaningful reform.

Standardization

In my own remarks today, I would like to focus on one vital facet of the proposed legislation before the subcommittee -- the provisions relating to design standardization -- and the major contribution standardization can make in improving the effectiveness of the nuclear licensing and regulatory process and the safety of nuclear power plants.

By "standardization," I mean the process by which a nuclear plant supplier, an architect-engineer, or a "design team" including both, develops a generically applicable reactor design. It would be an essentially complete and final design for all parts of the nuclear plant systems important to radiological safety; and their "generic" character would be such that they could be used for a multiple number of units at a multiple number of sites. All of the information necessary for the NRC to grant an operating license would be provided. This is in contrast to the present system and practice whereby reactor vendors, A-E's and utilities waste their technical resources on a variety of custom, single-plant designs.

Before the standardized design would be referenced in a specific facility license application, it would have been thoroughly reviewed by the NRC and all safety issues would have been resolved. Because the standardized design would be intended for use at a number of different sites, the design would be reviewed for amenability to an envelope of sites with certain parameters rather than one specific site. The Commission would approve the standardized design only if, after resolving all safety issues and providing an opportunity for a public hearing, it determined that such approval would be consistent with the public health and safety and the common defense and security.

Thereafter, a utility electing to use the standardized design would reference it in its license application. The NRC would not repeat the review of design issues previously resolved in the standardized design approval proceeding. In connection with the site-specific facility license application, the NRC would, of course, review issues relating to the marriage of the standardized design to a particular site, or any other issues not resolved in the prior design approval (or early site approval) proceeding, and members of the public with an affected interest would have an opportunity for a hearing on such issues.

Coupled with early site approval, pre-approval of standardized designs would permit a utility to chose a design that had already been approved as safe by the NRC and a site that had been approved as acceptable before committing itself to a license application to build and operate a specific nuclear plant. Single-stage licensing of both construction and operation would provide the essential final ingredient. Upon establishing the compatibility of the site and the design, the NRC should then authorize the utility, in a single proceeding, both to construct and -- provided the plant is constructed consistent with the design approval -- operate the plant. The NRC would, of course, perform inspections throughout the construction of the plant thus verifying that the plant was constructed in compliance with its license application and authorization before the plant could begin operation. Since all design and site interface issues would have been resolved in the design approval and single-stage license proceedings, there would be no need for the NRC to review these matters again at the preoperation stage.

An important aspect of design standardization is the centralization of design responsibility for all radiologically significant portions of the nuclear plant. The reactor supplier either alone or in conjunction with an architect-engineer as a "design team", would develop and obtain regulatory approval for the standard design. Such an arrangement would eliminate a number of engineering interfaces which typically create difficulties in both the designing and the licensing review of nuclear plants.

GE believes that standardization offers the single most important contribution to a more effective licensing and regulatory process and to the assurance of a high level of safety for future nuclear power plants. There are four important reasons why this is so and why standardization deserves to be favorably considered and affirmatively supported by the Congress.

° First, standardization necessarily leads to a better allocation of industry and regulatory safety resources;

° Second, standardization will improve the quality of NRC licensing and regulatory decisions;

° Third, standardization will substantially reduce the costs of constructing and licensing new nuclear units; and

° Fourth, the pre-approval process, which is an integral aspect of standardization, will enhance both the timeliness and effectiveness of public participation in the licensing process.

Let me address each of these benefits in more detail:

Increased Safety

Standardization will make an important contribution to the safety of nuclear power plants in several ways:

° It will result in suppliers and architect-engineers devoting greater resources to a given design. Similarly, it will decrease the number of different reactor designs that the NRC will have to review, understand, and regulate. In short, it will optimize the allocation of safety resources within industry and government.

- Standardization will also increase the applicability of operational experience as well as industry and NRC awareness of that experience. With fewer design differences between plants, operating events will be easier to understand and the relevance of an event at one reactor to other reactors will be more obvious.

- Further, design standardization will facilitate resolution of many generic safety issues by reducing the number of designs that the industry and the NRC must investigate in search of the causes of, and solutions to, generic safety-related problems.

- And, finally, design standardization will enhance quality assurance by reducing the total number of different systems and components that must be designed, manufactured, installed, maintained, and inspected.

Better Regulation

Closely related to this contribution to safety is the improvement in the quality and efficiency of NRC regulation that will result from standardization. As I said before, standardization will decrease the number of different designs that the NRC will have to review, understand, and regulate. Similarly, standardized final designs that have been pre-approved for multiple future use will eliminate the need for repetitive *ad hoc* design reviews in individual plant proceedings. Moreover, standardization, coupled with single-stage licensing prior to the beginning of plant construction, will eliminate the anomaly of design reviews at the pre-operational stage -- after a facility is essentially built.

In short, standardization will enable the NRC to focus its regulatory resources with greater intensity on fewer designs and in fewer review proceedings, allowing it to concentrate on the more important safety questions at the time when it makes the most sense to do so.

Reduced Costs

Further, standardization will reduce the cost of constructing a nuclear power plant. By taking the design review off the critical path of the licensing process and by settling on an essentially final design before construction begins, standardization can reduce the time it takes to license and construct plants by several years, saving hundreds of millions of dollars in capital and interest costs.

Moreover, standardization will enable the NRC to conduct complete, thorough safety reviews before major construction is initiated. The constant changing of the design under the present two-step process is a major reason for the cost increases and delays currently experienced by nuclear projects. Standardization permits final resolution of all design safety issues -- including related public participation in that process -- before construction begins, giving a utility confidence that all licensing requirements are understood and can be met before it commits itself to the design.

Improved Public Participation

In addition, design standardization will permit more effective public participation by affording the affected public an opportunity to have its questions considered earlier in the process -- prior to any major utility commitment to a plant employing the design. Moreover, the public would be better informed because the hearing would be held with respect to an essentially complete and final design, which would provide a greater information base.

For these reasons -- increased safety, better regulation, reduced costs, and improved public participation -- GE has long been committed to standardization. Indeed, in 1975, GE became the first reactor vendor to obtain NRC approval of a standard design -- the General Electric Standard Safety Analysis Report, or GESSAR. As many as twenty domestic plants, including six nuclear units planned by the Tennessee Valley Authority, referenced GESSAR in full or in part in their construction permit applications.

Our experience has proven that standardization works. GESSAR established a vehicle for daily communication between GE and the NRC, thus improving the flow of important technical and safety-related information between the designer-supplier and the regulator. During the NRC's review of GESSAR, the NRC staff asked and received satisfactory answers to approximately 1,100 questions. Because these questions were resolved prior to any individual facility's licensing proceeding, when the NRC reviewed the construction permit applications for the six TVA units referencing GESSAR, for example, the staff had virtually no technical questions on the nuclear portion of the plants. (These TVA units were later cancelled for other reasons.) The NRC had only to review the site and the non-radiological portions of the plants. The results were smaller dockets and shorter licensing review schedules. Moreover, because all generic issues could be resolved on one docket, there was no need for reconsideration and duplicative resolution of those issues in separate proceedings.

GESSAR was resubmitted to the NRC in 1980 for final approval of a total final design for all plant systems important to radiological safety. GESSAR was recently approved in the NRC-issued Staff Safety Evaluation Report. The NRC review, as confirmed by the conclusions of the Advisory Committee on Reactor Safeguards, is that there are no open safety issues on the GESSAR docket. We expect final approval of GESSAR this month. We are proud of that accomplishment.

GE is by no means alone in its recognition of the merits of standardization. The blue-ribbon panels investigating the accident at Three Mile Island -- the Presidentially-appointed Kemeny Commission and the NRC-appointed Special Inquiry Group -- strongly recommended that the NRC encourage the use of standard designs. The NRC's Special Inquiry Group -- the Rogovin Panel -- concluded that standardization would "in the long run substantially improve plant safety and reliability."

As regards the practical workability of standardization, I should also note that each of the three other principal nuclear steam supply system suppliers has developed its own standard NSSS design, and five architect-engineer firms have submitted standard balance of plant designs. The U.S. Navy has practiced design standardization in the naval reactor program for years; and the nuclear programs of several other nations -- notably France and Japan -- are characterized by design standardization. In this latter regard, I would note that American companies are at a distinct disadvantage in competing in the international market for nuclear reactor orders because the NRC does not certify standardized reactor designs. Other companies are able to offer designs that are certified by their respective governments.

The legislative "finding" proposed by NRC in section 2(a)(5) of S.893, aptly captures the potential benefits of standardization and turns their realization into a national policy goal. In the Commission's words:

> [T]here is a need to encourage the development and use of standardized nuclear power designs because such designs can benefit public health and safety by concentrating the resources of designers, engineers, and vendors on particular approaches, by stimulating standardized programs of construction practice and quality assurance, by improving the training of personnel and by fostering more effective maintenance and improved operations, and because the use of such designs can permit a more effective and efficient licensing and inspection process.

Despite these credentials and the promise which they hold, neither the NRC nor the nuclear industry will accord standardization the resource allocation priority it deserves -- and must have for successful application -- until the

Congress takes certain actions. Congressional action is required to authorize single-stage licensing -- a prerequisite if utilities are to be expected to commit themselves to standardized final designs. So long as utility-applicants remain subject to a second design review at the operating license stage, and to the uncertainties inherent in such a process, utilities will see no advantage in committing to standardized final designs and vendors will have scant incentive to apply resources to their further development.

Congressional action is also needed to authorize the NRC to grant standardized design approvals of the nature contemplated in section 194 of both the DOE and NRC bills. The NRC and the AEC before it have, of course, had a limited standardization program in effect for nearly a decade and the NRC may even have sufficient authority under its broad statutory powers to grant design approvals of the nature contemplated by these bills. The fact remains, however, that for standardization to become a commercial as well as regulatory reality it must be made an integral part of an overall licensing process which properly accommodates this design approach -- a process which not only provides a secure legislative framework for approvals of standardized designs, but also specifies their subsequent treatment in the licensing process, related public participation, stability of approvals once given, and integration with the site approval process. Importantly, moreover, the Congress is the only body which can give this concept the imprimatur of national policy approval.

In short, the Congress should, in explicit statutory terms, elevate design standardization to the rank of a major nuclear power program aim -- as the excellent legislative "findings" and "purposes" proposed by NRC would do -- and establish a licensing framework from which the full regulatory benefits of standardization can be realized.

Not only are these licensing and regulatory improvements needed, they are needed now. The Congress' own Office of Technology Assessment said as much when it concluded -- and I quote --

> If standardization is to succeed at all, NRC must start planning for it now during this period of slack growth in nuclear power. They must develop plans for future standardization, including possible implementation of one-step licensing. In addition, vendors should realize that domestic orders for nuclear steam supply systems (NSSS) may not occur over the next few years, and they should take this opportunity to review and improve their basic designs.

* * * *

As I said earlier, it has been my aim to focus these remarks on design standardization. Accordingly, I am not going to undertake a comparative analysis of the provisions of the two licensing reform bills now before the Congress. Bart Cowan has already provided this subcommittee with an able analysis of these provisions on behalf of the Atomic

Industrial Forum, the American Nuclear Energy Council, and the Edison Electric Institute, and GE generally endorses these comments as well as those earlier presented by Bill Lee in his testimony.

Since I have given NRC considerable credit for the strong emphasis it has placed on standardization in the bill which the Commission has proposed (S.893), I would also point out that in one crucial respect bearing on standardization the NRC bill is seriously deficient; this is with respect to single-stage licensing, which appears in section 185(b) of both the NRC and DOE bills. Only the DOE bill would truly provide single-stage licensing; the NRC bill merely reformulates the present two-step licensing approach, complete with two staff reviews, two public hearings, and two license authorizations. I would emphasize that true single-stage licensing is essential to the success of standardization and the realization of its benefits. To achieve this, the NRC's laudable standardization aims should be mated with the DOE provisions governing the pre-operational stage. This matter is developed in greater detail in Mr. Cowan's analysis of the two bills.

Conclusion

To sum up, General Electric believes that legislation to reform the present NRC licensing and regulatory process is urgently needed. Any such legislation, to be effective, must include a workable framework to encourage and accommodate standardization, as well as important provisions which I have not addressed because others have discussed them in detail -- rational backfitting provisions and reform of the overly-proceduralized hearing process. To the extent that provisions in the two bills before you provide these elements of meaningful reform, they deserve the Congress' favorable action.

Mr. Chairman, this completes my prepared remarks. I would be happy to answer any questions you or members of your Subcommittee may have.

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A. PHILIP BRAY
VICE PRESIDENT AND GENERAL MANAGER

AUG 23 1983

August 16, 1983

The Honorable George J. Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell,

Your letter of July 20, 1983 asked me to comment on a statement regarding hearing delays and backfitting made by former NRC Commissioner Peter A. Bradford to the Subcommittee on Nuclear Regulation on July 14. Subsequently, I was asked for my comments on five additional questions which you have posed to witnesses before the Subcommittee. I appreciate your seeking my views on these matters and have set forth my responses as grouped below.

THE BRADFORD STATEMENT

Mr. Bradford asserted that "the public hearings aspects of the licensing process has never delayed a single nuclear power plant's operation by a single week"; and that industry, NRC, and DOE testimony before your Subcommittee fails to cite a single specific illustration of such a delay resulting from either a public hearing or a unnecessary backfit that the proposed nuclear licensing reform bill would cure.

REFORM OF THE HEARING FORMAT

With respect to delays resulting from licensing hearings, I believe the cited statement misses the real purpose of the hearing reforms contained in both the NRC and DOE legislative proposals now before your Subcommittee.

As I emphasized in my testimony before the Subcommittee, I see legislative reform of the licensing process as having four fundamental aims: more effective application of industry and NRC safety resources; improved quality of regulatory decisions; reduction of unnecessary costs; and more effective public participation. I support the proposals to reform the format of the licensing hearing not because such reforms would shorten licensing hearings, but because hybrid hearing procedures would provide a more efficient and effective hearing process -- one that would be better suited to the resolution of technical issues.

Speaking as one who has had some twenty-seven years of experience on the technical issues involved in designing and licensing nuclear power plants, I believe the present trial-type hearing format is ill-suited to the resolution of complex, technical issues. This view, I would add, is shared by many other technical people with experience in nuclear licensing hearings. It is worth recalling, moreover, that the Congress itself was dubious about the value of trial-type procedures in resolving the complex technical questions involved in nuclear licensing proceedings. The legislative history of the 1962 amendments to the Atomic Energy Act, which established the Atomic Safety and Licensing Board, reflects that the Congress urged the Commission to rely on procedures more appropriate to resolving complicated technical and scientific questions.

Importantly, the hearing provisions of both S.893 and S.894 provide safeguards as well as procedural flexibility. The Commission will be expected to employ adjudicatory procedures in resolving any disputed issues of fact requiring them, and Commission determinations with respect thereto will be subject to judicial review.

I sincerely believe that the hearing reforms proposed -- coupled with the timelier and better informed public participation which is integral to design standardization and single-stage licensing -- will markedly improve the public's ability to make meaningful contributions to the licensing process, not detract from it.

UNNECESSARY BACKFITS

In response to your specific request, I am attaching to this letter material compiled by my staff relating to "unnecessary" backfits. The compilation is drawn from the record of public meetings of the Nuclear Regulatory Commission, NRC publications, and the report on the NRC prepared by the Energy Task Force of the President's Private Sector Survey on Cost Control. I would couple this submission with the observation that it is difficult to determine whether a particular backfit was "necessary" or "unnecessary" in a regulatory process which lacks clearly defined backfitting criteria and a coherent system for their imposition.

I want to emphasize that the real issue underlying the proposals for backfitting reform is not the "necessity" of individual backfits, but the lack of soundly defined and consistently applied regulatory criteria governing backfitting. This is a primary reason for the instability of the current regulatory process -- an instability which holds the potential for adverse impact on the safety of nuclear power plants.

Although a backfitting regulation was established administratively some thirteen years ago, the NRC itself acknowledges that the regulation rarely has been enforced. Moreover, the standard contained in the regulation provides no guidance as to what factors the NRC is to consider in determining whether to impose a backfit. Indeed, there is not even a requirement that the agency consider the effect of the proposed backfit on the overall safety of the plant.

The backfit reforms advanced by DOE in S.894 recognize that new requirements have a proper role in any soundly administered regulatory process. The aim of these reforms is the establishment of clearly defined backfit standards and a systematic process for their application. The proposed backfitting regime would not preclude necessary backfits or diminish the level of protection afforded to the public health and safety. Indeed, these reforms are designed to assure that the potential impact of proposed backfits on overall plant safety is thoroughly considered and that measures necessary to maintain plant safety are, in fact, implemented.

RESPONSES TO FURTHER QUESTIONS

Question 1.

> One of the most serious complaints against the NRC licensing procedures concerns the backfitting regulations. I would like to know specifically which backfitting orders over the past 10 years you think were inappropriate, why you believe they were, what alternative safety procedure could have been taken and how much the inappropriate backfitting requirements cost.

The response is contained in my comments, above, on backfitting.

Question 2.

> One of the reasons why so many changes are ordered now is that construction permits are allowed with only 25% of the plans available to the NRC. For "one step licensing," 90% of the plans would have to be available. Would the companies be willing and able to provide these fuller plans? Why do companies not provide more information now at the construction phase? If design plans could be settled now so that they could not be raised again at the operating license phase, would companies be willing to submit plans which are 80-90% complete under current procedures?

As I testified on June 14, one hundred percent of the design safety information required for an NRC review for granting an operating license is provided in the General Electric Standard Safety Analysis Report

(GESSAR). Thus, it is now possible for any utility employing the GE standard design to submit one hundred percent of the design safety information in its construction permit application.

The current licensing process, however, provides no real incentive for a utility to submit a complete and final design at the construction permit application stage. Under the current licensing regime, a utility is subject to two design reviews and two public hearings on design issues regardless of whether the design is complete and final at the construction permit stage -- or even has previously been approved for use in another plant.

Of parallel importance, the current regulatory regime provides no binding approval for standardized designs. To draw an analogy with another regulated industry, it is as if Boeing, the Federal Aviation Administration, and the public redesigned, re-reviewed, and relitigated the design of the 747 every time an airline wanted to buy another airplane. Or every time Boeing developed a new safety feature for its next design generation, the FAA required it to backfit that feature on all 707s, 727s, and 747s.

A further problem with the current regulatory regime is the fact that GE -- the designer -- is not the applicant before the NRC. Each utility desiring to employ the GE design must individually have the NRC re-review and reapprove it. Inevitably, as many different variations of the design result as there are applicants.

Accordingly, as I said in my prepared statement for the June 14 hearing, if standardization is to become a commercial reality it must be made an integral part of an overall licensing process which properly accommodates this design approach. This process must provide a secure legislative framework for standardized design approvals, authorize single-stage licensing, provide for stability of design approvals once granted, and integrate them with the site approval process. So long as utility-applicants remain subject to a second design review at the operating license stage and to the uncertainties and instabilities of the present process, they will see no advantage to committing to standardized final designs and vendors will have little incentive to commit resources to their future development.

QUESTION 3.

A number of plants have been completed in only 7 or 8 years from construction permit approval. How is it that plants like St. Lucie's in Florida have made it through the NRC regulatory process in their manner when other plants have had such difficulty?

Florida Power and Light was able to complete St. Lucie-2 in about six years after it was awarded a construction permit. Several factors contributed to this accomplishment.

- The design of St. Lucie-2, which is virtually the same as that of St. Lucie-1, was nearly complete before construction began.
- Construction of Unit 2 began just as Unit 1 was being completed, thus enabling FP&L to utilize on Unit 2 a substantial part of the experienced work force that built Unit 1.
- FP&L's demand growth remained substantially above the national average, thus allowing FP&L to maintain its original construction schedule.
- FP&L faced no intervention on its operating license application.

The completion experience for St. Lucie-2, and the somewhat comparable construction schedule for the Palo Verde plant of Arizona Public Service Company, are plainly the exception rather than the norm. The average construction time for the eleven other plants which, as of May 31, 1983, the NRC expected to receive full power operating licenses during 1983, is about ten years. The average construction time for the thirteen plants expected to receive their operating licenses during 1984 is about nine years.

Simply because two utilities were able to overcome the obstacles to timely construction and operation imposed by the present licensing regime in no way diminishes the serious need for licensing reform. They represent unusual exceptions to what has become the distressing norm -- some 12 to 14 years to license a plant for construction, build it and have it authorized for commercial operation. The result is an enormous burden on industry, government and the consumer, without compensatory safety benefits.

QUESTION 4.

Given that emergency planning, management ability, and operator training cannot be examined until near the completion of a plant, does it make sense to approve a final operating license before construction? How will public confidence in the system be affected if no hearing is held on these matters before operation begins?

The feasibility of emergency planning, the management's ability to construct and operate a nuclear power plant, and the adequacy of the operator training program can and should be resolved before construction begins. It is irrational to wait until a utility has spent a billion dollars or more constructing a nuclear power plant before determining whether emergency planning is feasible with respect to the plant or whether the utility is capable of operating it safely.

Under the single-stage licensing proposals, the criteria governing emergency planning, quality assurance and operator training programs, and all significant licensing requirements would be established prior to the start of construction. The adequacy of these criteria and the utility's ability to meet them would be thoroughly reviewed and resolved before construction begins. Moreover, the public would not only have an opportunity to participate on all of these issues, but that opportunity would be far more meaningful than under the present two-step process because the hearing would be held with respect to a greater information base and before any major construction commitments have been made.

Whether a plant has been constructed in accordance with its license and whether government and utility officials are prepared to implement an emergency plan cannot, of course, be resolved until the operational stage. These are matters, however, which appropriately are determined through inspections, testing, and audits conducted by official experts.

The foregoing underlies the approach embodied in the DOE reform proposal (S.894). Under the single-stage licensing proposal of S.894, the NRC would be required to make a determination on these issues -- based on inspections, testing, and auditing -- before a nuclear power plant could begin operations. In the event that the NRC determines that emergency preparedness is inadequate, or that the plant has not been built in accordance with its license, the plant would be prohibited from operating despite the fact that the NRC had issued a construction and operating license before construction began, just as a plant is prohibited from operating under the present regime if a safety system fails after an operating license has been granted or the plant otherwise is no longer in compliance with its license. Although there would be no routine opportunity for a hearing on these inspection, testing and audit questions, a mechanism would be available for bringing to the Commission's attention any relevant information concerning alleged license violations. And, where a person raises a significant safety or environmental issue and makes a substantial showing that a plant does not meet its license requirements, the Commission would have the authority to institute a hearing.

The present system of facility licensing, with its profusion of hearings, plainly, has seriously eroded public confidence. I believe that the proposed system provides a sound basis for *greater* public confidence in the safety of nuclear power plants and the efficacy of NRC regulation.

QUESTION 5.

> Many improvements in NRC procedures can be accomplished without legislation. What improvements do you see can be done without legislation? What are your priority areas which require legislation.

In theory, I believe several of the reforms contained in the legislative proposals before your Subcommittee could be accomplished administratively -- at least in part. I have in mind pre-approval of facility designs and sites and also backfitting reforms. But these reforms would not then have the national policy stamp and long-term stability that only legislation can confer. As Chairman Palladino testified on May 25, 1983, in light of the shifting composition of the Commission, legislation is needed to give these reforms the permanence and stability they require for the full realization of their benefits. And these changes are of sufficient policy importance to warrant Congressional involvement.

As a practical matter, moreover, none of the reforms which I believe are urgently needed can be effectively *accomplished* without legislation. I agree with Governor Babbitt's statement to your Subcommittee on July 14:

> The Commission is caught in a murderous cross fire between opposing forces out in the public, in the industry and on Capitol Hill. . . It is for that reason that I believe that there ought to be a congressional mandate on these procedural items. If not, they are going to get just cut to shreds in the controversy over any changes.

Let me point out further: Were the Commission to attempt to implement many of the important changes administratively (e.g., hearing and backfitting reforms, and single-stage licensing), its authority to do so would likely be challenged in the courts and the reforms would remain in limbo for years.

Finally, and importantly, standardization will never become a commercial reality unless it is made an integral part of an overall licensing process which properly accommodates this design approach. As I have testified, I believe that standardization offers the single most important contribution to a more effective licensing and regulatory process. Its full benefits will not be realized, however, unless standardization -- as well as single-stage licensing, early site approval, and sensible backfitting and hearing procedures -- is expressly authorized by statute.

I thank you for inviting me to comment on these issues. Please let me know if I can provide any further information.

Sincerely,

Phil Bray

A. Philip Bray

ATTACHMENT

Since 1970, the imposition of backfit requirements purportedly has been governed by Section 50.109 of the NRC's regulations. Section 50.109 provides that a backfit, which the regulation defines as "the addition, elimination or modification of structures, systems or components of the facility after the construction permit has been issued, "may be imposed only if it will provide "substantial, additional protection which is required for the public health and safety or the common defense and security."

On March 1, 1983, thirteen years after adoption of Section 50.109, the NRC's Executive Director for Operations and the Deputy Executive Director for Regional Operations and Generic Requirements advised the Commission that the "intent behind 50.109 has not been followed except in two or three cases." Transcript at 31-32. Although these officials stated that backfits had not been "frivolously added . . . to particular licenses," (Transcript at 29) they indicated that "there are things that . . . have [been] required that, had they been subjected to this test, . . . would [not] have passed." Transcript at 34.

Instances of backfit requirements deemed by those affected to be unnecessary or counterproductive are cited in the report of the Task Force of the President's Private Sector Survey on Cost Control that studied the NRC. This Task Force, which conducted one part of an overall review of Federal activities by business executives and others at the request of President Reagan, concluded that "[t] he primary problem affecting operating plants and those nearing completion -- the one which has the most severe impact in terms of economic cost, regulatory instability, and misallocation of industry and NRC safety resources -- is backfitting. Working Draft Report on the NRC, Energy 21, p. 56, working Appendix on DOE, PERC and NRC, vol. II (April 15, 1983) (hereinafter referred to as the "Report").

At the request of the Task Force, in 1982, the Edison Electric Institute sought information on backfitting experiences from utility companies that own and operate nuclear power plants. The results of this survey are found in two appendices to the Task Force's Report. Appendix 1 provides specific examples of backfit requirements deemed unnecessary or counterproductive by the utilities involved. Appendix 2 contains data on costs attributable to new regulatory requirements for 64 nuclear plants coming on-line between 1970 and 1983. The Task Force Report, while cautioning that "one may argue over whether specific requirements were necessary or unnecessary," pointedly goes on to state "it is indisputable that the sheer volume and pervasiveness of these new requirements reflect an unacceptable lack of regulatory stability." (Report, p. 6).

The NRC staff has conducted its own survey of licensee backfits, the results of which were published in 1981 as NUREG-0839, Report on a Survey by Senior NRC Management to Obtain Viewpoints on the Safety Impact of Regulatory Activities from Representative Utilities Operating and Constructing Nuclear Power Reactors. The report looks at post-TMI requirements and concludes that although no single backfit requirement affected plant safety adversely, "the potential for a negative safety impact caused by the number and scope of requirements, has become very real to both NRC and the nuclear industry. The full significance of this issue may have been underestimated by the NRC staff." NUREG-0839, p. 1 (July 1, 1981). After considering the comments of twelve representative licensees, a portion of which are set forth in an appendix to the report, the NRC staff concluded that, "notwithstanding the competence and good intentions of the staff, . . . the pace and nature of regulatory actions have created a potential safety problem of unknown dimensions." id. at 9.

TESTIMONY OF JAMES S. MOORE
VICE-PRESIDENT AND GENERAL MANAGER
WATER REACTOR DIVISIONS
WESTINGHOUSE ELECTRIC CORPORATION
On
SENATE BILLS 893 AND 894

Before

THE SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON NUCLEAR REGULATION

JUNE 14, 1983

My name is James S. Moore. I am Vice President and General Manager of the Water Reactor Divisions of the Westinghouse Electric Corporation. Accompanying me today is Mr. Edward P. Rahe Jr. who is Manager of the Nuclear Safety Department in the Westinghouse Water Reactor Divisions. I wish to thank the Chairman and members of this committee for this opportunity to express our views on the proposed legislation to improve the nuclear power plant licensing process. Based on over 25 years of personal experience participating in all phases of that process including licensing and rulemaking hearings, I feel that the proposed changes are sorely needed.

Westinghouse is a world leader of long standing with extensive experience in practically all aspects of the nuclear business. Furthermore, because of our unique position in the industry as the reactor vendor who has designed more nuclear reactors than any other reactor vendor in the world, we have accumulated more direct experience with practically all phases of the licensing process than any other organization in the business. It is from this experience base that we speak. We sincerely hope that you will give serious consideration to our comments and suggestions as you deliberate on the action you will take on the proposals now before you.

The problems confronting the U.S. nuclear power industry are many, varied and intricate. Complex problems frequently elicit simplistic solutions out of a growing frustration with lack of progress. The proposed regulatory reforms are not simplistic solutions but rather are incisive and vitally important. There can be no solutions to the problems facing the nuclear industry without regulatory reform and, therefore, it is needed and needed now. The cumbersome and dilatory licensing process which was designed for an emerging industry with very little experience is preventing the maturing of that industry and threatens to deprive the American public of the cheapest, cleanest and safest means of producing electricity - the life blood of a growing economy. The problems of the licensing process are more fundamental and pervasive than any other problem facing our industry. The regulatory environment provides the framework within which all of the other problems must be addressed. Regulatory reform alone does not solve all the problems but it is necessary to create an environment in which the problems can be solved.

The Westinghouse Electric Corporation strongly supports the regulatory reforms proposed by the Department of Energy (DOE). The DOE's proposed legislation differs significantly from that proposed by the Nuclear Regulatory Commission (NRC) in that it would impose much needed discipline in the licensing process and create an important incentive for the development of improvements in nuclear power plant designs. The discipline that would be imposed by the DOE proposals does not just apply to the NRC but applies to the nuclear industry as a whole. The incentive for developing improved nuclear power plant designs stems from the provisions to control unnecessary backfitting and from the provisions for processing deviations that may occur during the construction phase of a project licensed under the proposed one-step licensing process. I will address these in more detail later in my testimony along with some suggestions for providing even more discipline and incentives for developing nuclear power plant improvements. As you may surmise, we at Westinghouse believe that the key to providing the certainty and stability now sadly lacking in the licensing process is discipline - discipline in all phases of the process and discipline on the part of all the participants - the industry, the NRC and the interested members of the public. Legislation is needed to foster that discipline. Leaving these matters to the discretion of the NRC has not worked in the past and, although the present Commission is attempting to address these problems, there is little reason to believe that these efforts will be successful without legislation. Administrative reforms alone, involving as they do the exercise of NRC discretion, are insufficient. They are too fragile a base to support an industry that must have a high degree of certainty and stability in order to survive let alone prosper.

I want to emphasise to you that Westinghouse remains firmly committed to the future of nuclear power. After all, as I mentioned earlier, experience has demonstrated that nuclear power is the cheapest, cleanest and safest means of generating electricity. With all that, it is hard to believe that there will be no remedies for the problems facing the American nuclear industry. Our commitment is exemplified by our involvement in the development of a next generation of nuclear power plant design - the Advanced Pressurized Water Reactor (APWR). This is a major cooperative effort with the Mitsubishi Company of Japan, one of our licensees, and a consortium of Japanese utilities. We view this endeavor as an exceptional and unique opportunity to redress many of those problems besetting the nuclear industry which are not amenable to resolution by regulation alone.

We intend to make fundamental changes in traditional plant design features which are both cost effective and inherently forgiving. Let me give you two examples of the fundamental changes we are making. Using American ingenuity we can, by the laws of nature (not man), prevent core uncovery during most postulated pipe breaks. Similarly, we can provide an emergency heat removal system that has virtually no moving parts.

We also intend to provide and discharge a single agent control responsibility over all aspects of plant design and construction which are safety related. In doing this, we intend to provide an exceptional level of design and construction control using state-of-the-art computer aided engineering techniques which we pioneered in the nuclear industry in the field of piping and piping support design and analysis. One thing that is not included in the proposals you are considering would be a very valuable adjunct to this. I recommend that a provision be added to authorize the NRC to adopt a program similar to that utilized by the Federal Aeronautics Administration to enhance engineering and construction quality assurance in the aircraft industry. Under such program, the NRC would appoint highly qualified industry personnel as engineering and inspection representatives of the NRC to work within their respective organizations to ensure that work done conforms to NRC requirements.

Finally, we intend to seek maximum regulatory accreditation of the design and control process in the context of a reference standard plant. In that regard, we have initiated a major U.S. licensing program intended to lead to one-step license certification of a total final plant design. In effect, we are anticipating a favorable regulatory framework which is synergistic to our efforts. Without this underlying framework of regulatory reform to provide the certainty and stability necessary for viability of the nuclear option, an exceptional opportunity for improvement may well be lost.

The Westinghouse commitment can be measured in terms of money (> $100M) and ingenuity; 40 American patents on unique design features. The ultimate irony of our situation is that, without the DOE's proposed legislation, an important American safety technology advance will be first licensed by Japanese companies in Japan.

In large measure our incentives for the W APWR program stem from the international marketplace and our need to remain competitive in that arena. While it is true that there is a hiatus in the U.S. with respect to new orders for nuclear power plants and many plants have been cancelled, there remains a substantial international nuclear market. We believe that the proposed regulatory reforms are essential to our ability to maintain the dominant position American suppliers have enjoyed in the international market up to now.

Historically, the U.S. has been a world leader in nuclear technology and the NRC has been the leader in setting safety standards and criteria. These leadership positions were won and maintained through a vigorous domestic market and the regulatory activities in support of that market. This, especially in the early years of nuclear development, enabled the U.S. to get ahead of its international competition and stay there. In spite of the hiatus in the U.S. marketplace, we have more commercial nuclear power plants in operation than any other country in the world. There are currently 83 nuclear plants licensed to operate with the prospect of this rising to approximately 130 in the next 10 years. This means that the cummulative U.S. experience can be expected to far exceed that of any of the international competition for quite some time. We must have a rational and disciplined approach to factoring that experience into regulatory requirements if we are to expect other countries to respect our judgements. It is important to recognize that decisions of the NRC can have strong impact on the cost of nuclear power in other countries particularly if they are operating plants of the same vintage as are affected in the U.S.

U.S. regulatory requirements including many of the U.S. codes and standards were adopted virtually verbatim worldwide during the emergence of the nuclear power industry. While essentially everyone integrated the regulatory requirements into their own regulatory system, they did not adopt the U.S. licensing process. Most countries developed their own, a more efficient process. The three other major nuclear-committed democracies - Great Britain, France and Japan - each have a licensing process that solves substantive issues at the early stages of a project, uses a cost-benefit backfit methodology, and provides early public participation in a constructive disciplined manner. The efficiency and discipline in these processes have been a factor that has allowed utilities in other countries to construct nuclear plants in half the time it takes utilities in the U.S.

At present, we see regulatory agencies in many other countries not only using their own regulatory process but also questioning and in some cases rejecting new NRC regulations and devising their own regulatory requirements in lieu of these. For example, regulatory bodies in some other countries do not give credence to the post-TMI requirements; they look at these as overkill. Also, several countries including the United Kingdom, Taiwan and Korea have rejected low population density siting regulations out of necessity and have relied upon the incorporation of engineered safeguards instead.

International bid specifications, issued to date, have required quoting to U.S. NRC regulations. Concommitant with this, other countries have achieved essentially the same excellent safety and reliability record as has been achieved in the U.S. for their U.S. designed nuclear power plants. Furthermore, international competition has had to bid to these U.S. regulatory requirements without the benefit of the direct interaction with the NRC that U.S. companies have. However, if the current trend of departing from the U.S. regulatory requirements by foreign regulatory bodies continues, as we believe it will unless the NRC takes a more rational and disciplined approach to incorporating design modifications, we soon may be faced with having to bid to the regulatory requirements of other countries such as France, Germany or Japan in the international market. This would eliminate one of our greatest competitive advantages and would place U.S. vendors in the same disadvantageous position that our international competition has had to deal with to date.

This departure from U.S. regulatory requirements is being accelerated by the inability of the NRC to incorporate the results of safety research and development programs into its regulatory requirements. The Japanese regulations for emergency core cooling system performance allow the regulators to consider the results of research and development programs. Results of such U.S. conducted programs have already been incorporated, whereas in the U.S the results of these multi-million dollar programs are being ignored and requirements are frozen based upon the limited research and development data that was available 10 years ago when the Emergency Core Cooling Hearings were held. This in spite of the common knowledge that the large factors of conservatism incorporated then are no longer necessary. This is especially distressing in that a simple procedural change in the regulations, as has been pointed out to the NRC by the AIF, is all that is necessary. My point here is that the "backfit" problem has two dimensions. Not only does it involve the imposition of unnecessary layers of requirements but it also includes the unnecessary retention of conservatisms in the requirements long after the need for them has disappeared. Thus the departure from U.S. regulatory requirements and the prospect of bidding to the requirements of other countries is very real. The joint program with the Japanese that I mentioned earlier is an example of just how real this is. The APWR under development is being designed to meet the regulatory requirements of Japan, not those of the U.S. We are redesigning it to meet U.S. regulatory requirements in connection with our program to obtain NRC approval of the W APWR design for application in the U.S.

We need to be able to compete successfully in the international market during the current hiatus in domestic nuclear power plant orders in order to ensure our ability to respond when the domestic market returns, as I am sure that it will. Furthermore, that participation in the international marketplace will ensure our continued ability to be able to respond to our customer's needs for services in connection with those plants that are operating. Action by the Congress to provide the needed reforms in the regulatory process will be a strong signal to the international nuclear community that the U.S. intends to continue to be a reliable supplier of nuclear power plants and associated equipment and services and to continue its technological and regulatory leadership. While this will not by itself ensure our success in the international market, it will remove what has become a major impediment to that success.

At this point, I would like to discuss briefly our views with respect to each of the provisions of the legislative proposals which you are considering in the following order:

1. Procedures and Criteria for Implementing Design Modifications;
2. Hybrid Public Hearing Procedures;
3. Preapproved Designs;
4. Early Site Approval; and
5. One-step Licensing.

Although I will be addressing each of these provisions on their own merits, it is important that you recognize that these provisions form an overall disciplined approach to the regulatory process and that achieving most of the benefits depends on the combined effects of them taken as a whole. I would also like to explain that I will be using the DOE proposed legislation as the basis of my remarks since it is the DOE proposal that we endorse. I will not go into any detailed review of the provisions of the proposals. That has been done very well by Mr. Cowan appearing here today on behalf of the AIF and we fully support the detailed technical changes he has recommended to this Committee.

Implementing Design Modifications

The most urgent need in the nuclear industry today is to provide a rational and disciplined approach to incorporating design modifications into nuclear plants after the design has once been approved. Commonly referred to as "backfitting", the current practice has lacked adequate controls to ensure that the modifications are really necessary or appropriate. This is in spite of the fact that there is a long standing regulation authorizing the NRC to exercise a considerable degree of self-control. Westinghouse stands to benefit from NRC imposed backfits. They generate business for us. However, the changes should not be made unless they can be justified on a rational cost-benefit basis. To recommend otherwise is really a disservice to ourselves in the long haul, to the industry and to the public which we serve. The problem with the NRC proposal is that it would give the NRC only the most general authority to control backfitting; it only requires the NRC to propose regulations establishing procedures and criteria and does not establish any standards for the NRC to meet, but leaves them to the NRC's discretion. Furthermore, nothing would be added to the Atomic Energy Act imposing any continuing requirements in this regard. The net result is the same high level of uncertainty and lack of discipline as now exists. As the makeup of the Commission changes so can the approach to control of backfitting. The DOE proposal, on the otherhand, requires a more disciplined approach. It provides a clear definition of what constitutes a backfit, requires a centralized review considering certain relevant factors, requires approval by the Commission on the basis of a specific standard which ensures that only worthwhile changes will be backfit. The proposal specifically preserves the right of the Commission to take immediate action if needed to adequately protect the health and safety of the public. The fact that the Commission's existing backfitting regulation has never been invoked is in itself indicative of the need for this kind of legislative direction from Congress.

Hybrid Public Hearing Procedures

From my own personal experience participating in adjudicatory licensing and rulemaking hearings before Atomic Safety and Licensing Boards, the adjudicatory process is not an efficient means of resolving technical issues of the type usually involved in these proceedings. They are a drain on technical resources that cannot be justified by the results. I am not aware of any licensing proceeding involving a Westinghouse reactor in which the adjudicatory process resulted in any significant changes being ordered in our designs by the Atomic Safety and Licensing Boards reviewing the NRC staff's conclusions. That is not to say that changes were not made as the result of the technical discourse between ourselves and the NRC regulatory staff during the course of their reviews. Some were, but they were not the product of the adjudicatory process.

We recognize that some adjudication may be needed if there should arise some dispute of fact upon which the ultimate decision depends. Certainly if such disputed facts arise and the dispute cannot be resolved in the legislative format, then it would be appropriate to utilize adjudication to achieve resolution. The NRC proposal would simply allow the Commission to conduct hybrid hearings and then only in proceedings for issuance of a CP, OL, CP/OL, Site Permit, Design Approval or amendments or renewals filed after the date of enactment. The DOE provision would make the hybrid hearing process mandatory and is very similar to the provisions recently enacted in the Nuclear Waste legislation. Furthermore the provisions would be applicable in a much broader scope of proceedings. It is for these reasons that we support the DOE proposal.

Preapproved Designs

Preapproved designs, particularly if utilized in conjunction with preapproved sites and protected from unnecessary backfitting, have the potential to greatly reduce the cost and time required to bring nuclear power plants on line. Furthermore, the certainty and stability thus afforded to our customers will make nuclear power a much more attractive option. Our commitment to this is demonstrated by our W APWR program with the NRC in which we are in the process of obtaining reviews and approvals that will enable us to take full advantage of this provision if it is enacted. While these efforts will be beneficial to us under the existing regulatory process, they will be much more so if this provision is enacted. Furthermore we agree with Secretary Hodel's assessment of the safety benefits that will flow from the implementation of this provision. Emphasis on standardization to limit the number of different designs requiring review and approval and to avoid unnecessary rereview and relitigation of issues is well placed.

Nuclear power plants, TMI notwithstanding, have demonstrated an exceptional record of economic and safe operation. However this does not mean that there cannot or should not be further improvements. It must be recognized that any regulatory process has a built in bias favoring the status quo. Once regulatory approval has been obtained for some activity, there is a strong disinclination to do anything that would upset that approval and require rereview. The more cumbersome and uncertain the regulatory process, the greater is the disincentive. On this basis alone, we believe that the regulatory reforms being proposed have considerable potential for reducing present disincentives to making improvements. It is very important, in considering legislation to improve the regulatory process, that you be careful to eliminate, where possible, existing disincentives and to avoid creating new ones.

An example of legislation which has taken away incentives to develop and incorporate improvements in nuclear power plants is Section 108(c) of the NRC Authorization of Appropriations for Fiscal Year 1980. This section directed the NRC to promulgate regulations which:

> "... specify demographic criteria for facility siting, including maximum population density and population distribution for zones surrounding the facility without regard to any design, engineering, or other differences among such facilities." (Emphasis added)

The pre-existing Reactor Siting Criteria, 10 CFR 100, allowed credit to be taken for engineered safety features in evaluating exclusion areas, low population zones and population center distances. The history of nuclear power plant development shows that major improvements in nuclear power plant safety features occurred as a direct result of this provision. In fact, many of these developments, although originally conceived to gain acceptance of particular sites, have been found to be cost beneficial as standard features of nuclear power plant design.

Legislative provisions such as Section 108(c) have the ultimate effect of freezing the status quo and eliminating any incentive to even begin to look for new and better ways.

Even greater benefits could be realized if the legislation provided specific incentives to make improvements well above and beyond an acceptable level of safety. Incentives such as expedited licensing review and approval and filing fee forgiveness together with provisions for trade-off between individual regulatory requirements could be provided for demonstrable substantial improvements in overall safety.

Early Site Approval

This provision would allow applicants to obtain approval of sites for nuclear power plants from the NRC without committing to build a particular facility and even before he has selected any specific plant design. We support the objectives of this proposal as stated by Secretary Hodel when he appeared before you on the subject of licensing reform. As he pointed out, the objective is to provide earlier and more effective public participation in the site selection process, before significant resources are expended, thereby sparing both consumers and utilities unnecessary expense and costly planning uncertainties. We believe those objectives can be met under the DOE proposal. Furthermore, combining this provision with the preapproved design provision would leave very little work to be done to obtain permission from the NRC to begin construction because most of the major decisions necessary for such permission would already have been made.

One-step Licensing

The DOE proposal for one-step licensing will require increased discipline on the part of all parties to the regulatory process. Applicants and designers will have to provide a much greater amount of detailed design information at the combined construction permit/operating license (CP/OL) stage than is now required for a construction permit. Furthermore, deviations from the CP/OL requirements would require prior NRC approval if they involved unreviewed safety questions or changes to the technical specifications which would be contained in the CP/OL. Approvals of such changes would be subject to opportunity for public hearing pursuant to the recently enacted Sholly amendment provisions. Under the present two-stage licensing process, changes can be made at the risk of the applicant to be accumulated and reviewed at the operating license stage after the plant is essentially designed and contructed. Thus, under the DOE proposal, public participation occurs earlier in the process, providing a more meaningful opportunity to influence plant design.

Let me briefly describe the degree of discipline the DOE proposal brings to the process, how it actually increases the ability of representatives of the public interest to participate in a more meaningful way and why there should be no need for an automatic opportunity for a public hearing when the plant is ready to go into operation - a time when the costs of unnecessary delays are staggering. To assist you in following what I am about to say I have attached at the end of my statement five sheets (A-1 through A-5) which diagram the proposed one-step licensing process and the proposed deviation procedure. For convenience, I have divided the overall one-step licensing process shown on sheet A-1 into three phases - the initial licensing phase, the construction phase and the operating phase.

In the initial licensing phase shown on sheet A-2, the process is essentially the same as the current construction permit phase of the two-step process. However the substance of the proceeding is dramatically different. First, the final design would be defined in the application. Second, those inspections tests and analyses that must be performed to confirm construction compliance to the license are identified. Third, for each inspection, test and analysis thus identified, the specific acceptance criteria to be met to provide assurance of proper construction would be established. Fourth, all of these - essentially a checklist of what must be done to ensure that the plant is properly constructed - would be subject to NRC staff and ACRS review followed by an opportunity for public hearing and would be included in the CP/OL. The same process is equally applicable to facility operational requirements such as emergency planning, management structure, training, etc.

During the second or construction phase shown on sheet A-3, packages of supporting data would be maintained available for NRC inspection to show that the inspections, tests and analyses have been performed and the acceptance criteria have been met. The licensee would review any deviations from the CP/OL and obtain prior approval from the NRC if the deviation were not corrected and if it involved an unreviewed safety question or a change in the technical specifications contained in the CP/OL. The opportunity for public hearings on the deviations approved by the NRC would be governed by the Sholly amendment procedures. Any changes in the required inspections, tests or analyses as a result of the review of these deviations would be identified and approved in this process.

The deviation procedure, described on sheet A-4, is self explanatory. I will only say that it closely parallels the procedure now utilized in making changes to a plant that is already operating.

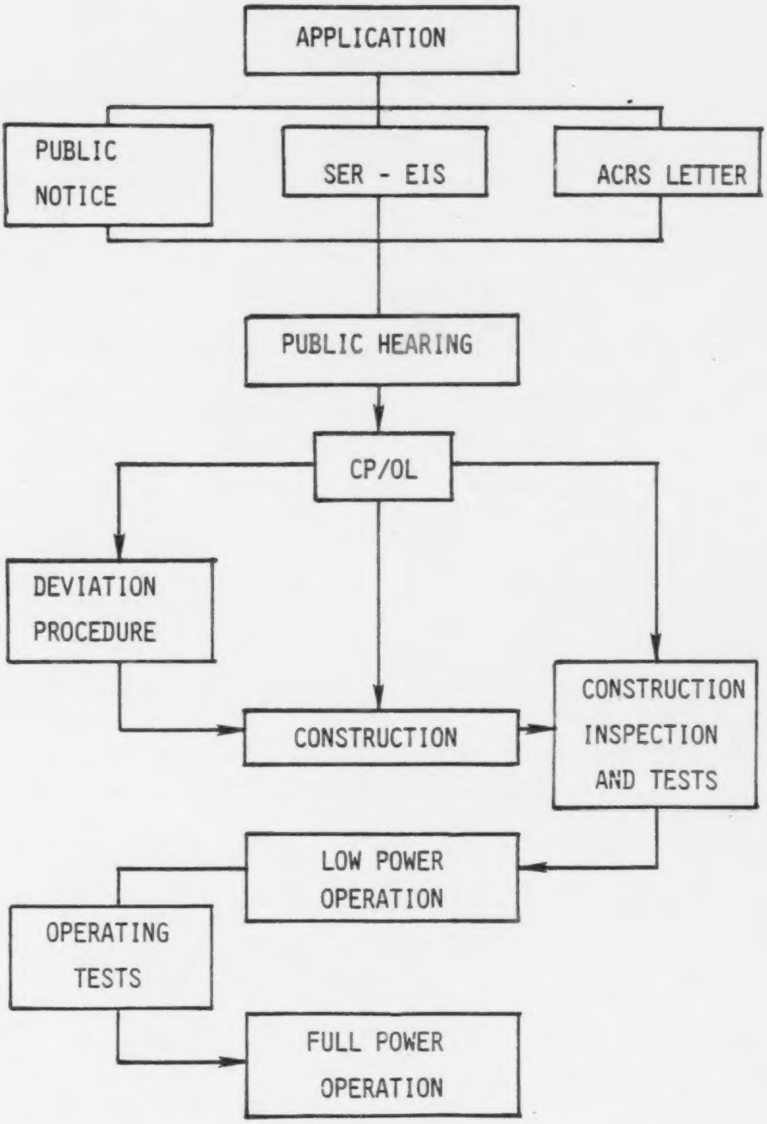
At the final or operating phase shown on sheet A-5, the licensee would certify the completion of his checklist. Any open items would be resolved by the licensee with NRC inspection and enforcement. When the completion of the checklist is confirmed, plant operation would commence beginning with a low power testing and escalation to power program culminating in a plant acceptance test at full power. At the completion of this program, absent any Commission action to limit or delay operation, either on its own motion based on differences in the results of inspections, tests and analyses from the pre-established approved acceptance criteria or upon a request for action under the Commission's regulations (10 CFR 2.206), commercial full power operation would begin.

As you can see, this is a much more disciplined situation than under the current two-step process. We are working toward this checklist approach as part of the W APWR licensing program with the NRC. At this point, we have developed a matrix of regulatory requirements applicable to all the various systems and components. This will be expanded to include inspections, tests and analyses and the corresponding acceptance criteria as the design is completed and NRC review progresses.

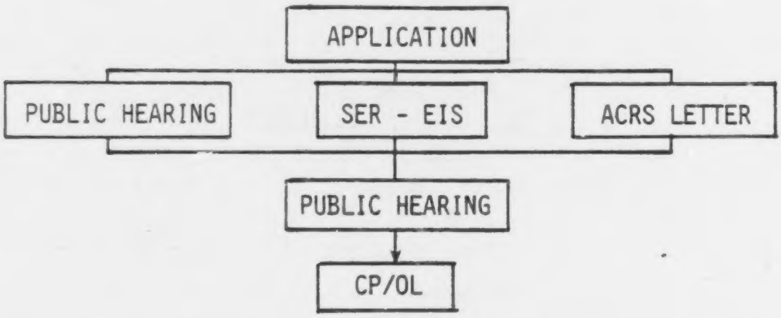
One of the things I have emphasized in my remarks is the importance of regulatory reform now if we are to maintain the American position in the international nuclear market. Before I conclude, I want to give you some figures which illustrate the overall importance of the international market to the American public in terms of employment. A single nuclear power plant export award represents approximately 15,000 man-years of direct employment plus another 15,000 man-years of indirect employment spread over a 6 or 7 year design and construction period. Over the lifetime of the plant after it goes into operation, as many as 30,000 man-years of additional employment may be provided through the supply of replacement fuel, components and technical services. This means jobs for engineers, technicians, factory workers and construction workers. It would be a shame to let this opportunity to increase employment opportunities for American workers slip away through inaction.

In conclusion, for all of the reasons I have stated, we support the DOE proposal, Senate Bill 894, with the changes recommended by the AIF and those which I have suggested in my remarks. We respectfully urge you on this Committee to recommend these proposed changes to the full Committee and Senate and to use your good offices to work for their passage into law. I want to thank you again for this opportunity. Mr. Rahe and I would be pleased to respond to any questions you may have at this time.

OVERALL CP/OL PROCESS


APPLICATION
PUBLIC NOTICE
SER - EIS
ACRS LETTER
PUBLIC HEARING
CP/OL
DEVIATION PROCEDURE
CONSTRUCTION
CONSTRUCTION INSPECTION AND TESTS
LOW POWER OPERATION
OPERATING TESTS
FULL POWER OPERATION

INITIAL LICENSING PHASE



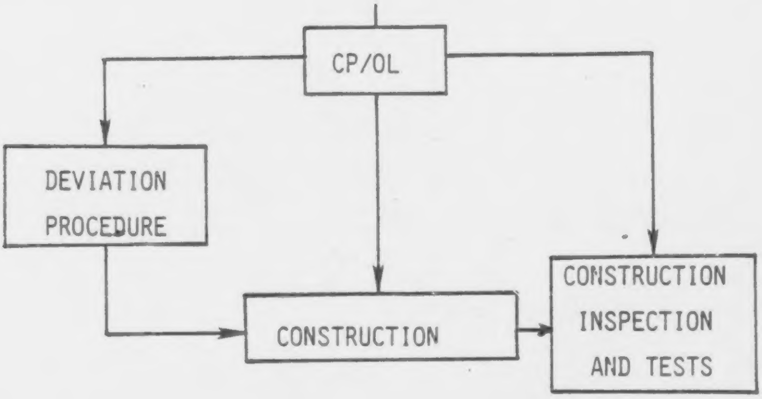
- DEFINE THE DESIGN, EMERGENCY PLAN, MANAGEMENT STRUCTURE ETC. OR DETAILED CRITERIA FOR THOSE ASPECTS WHICH CANNOT BE SUFFICIENTLY DESCRIBED AT THIS STAGE.

- ESTABLISH THE INSPECTION, TESTS AND ANALYSES TO BE PERFORMED TO CONFIRM THAT PLANT AS CONSTRUCTED, THE EMERGENCY PLAN, THE MANAGEMENT STRUCTURE, ETC. CONFORM TO THE TERMS OF THE CONSTRUCTION AND OPERATING LICENSE (HENCE CONFORM TO THE REQUIREMENTS OF THE ACT AND THE COMMISSION'S REGULATIONS)

- FOR EACH INSPECTION, TEST AND ANALYSIS REQUIRED, ESTABLISH THE SPECIFIC ACCEPTANCE CRITERIA TO BE MET TO PROVIDE ASSURANCE OF PROPER CONSTRUCTION, ADEQUATE EMERGENCY PLANS, ADEQUATE MANAGEMENT STRUCTURE ETC.

- THE MATTERS COVERED ABOVE WOULD BE CONSIDERED AT THE CONSTRUCTION AND OPERATING LICENSE HEARING AND WOULD BE INCLUDED IN THE LICENSE (CP/OL)

CONSTRUCTION PHASE


CP/OL
DEVIATION PROCEDURE
CONSTRUCTION
CONSTRUCTION INSPECTION AND TESTS

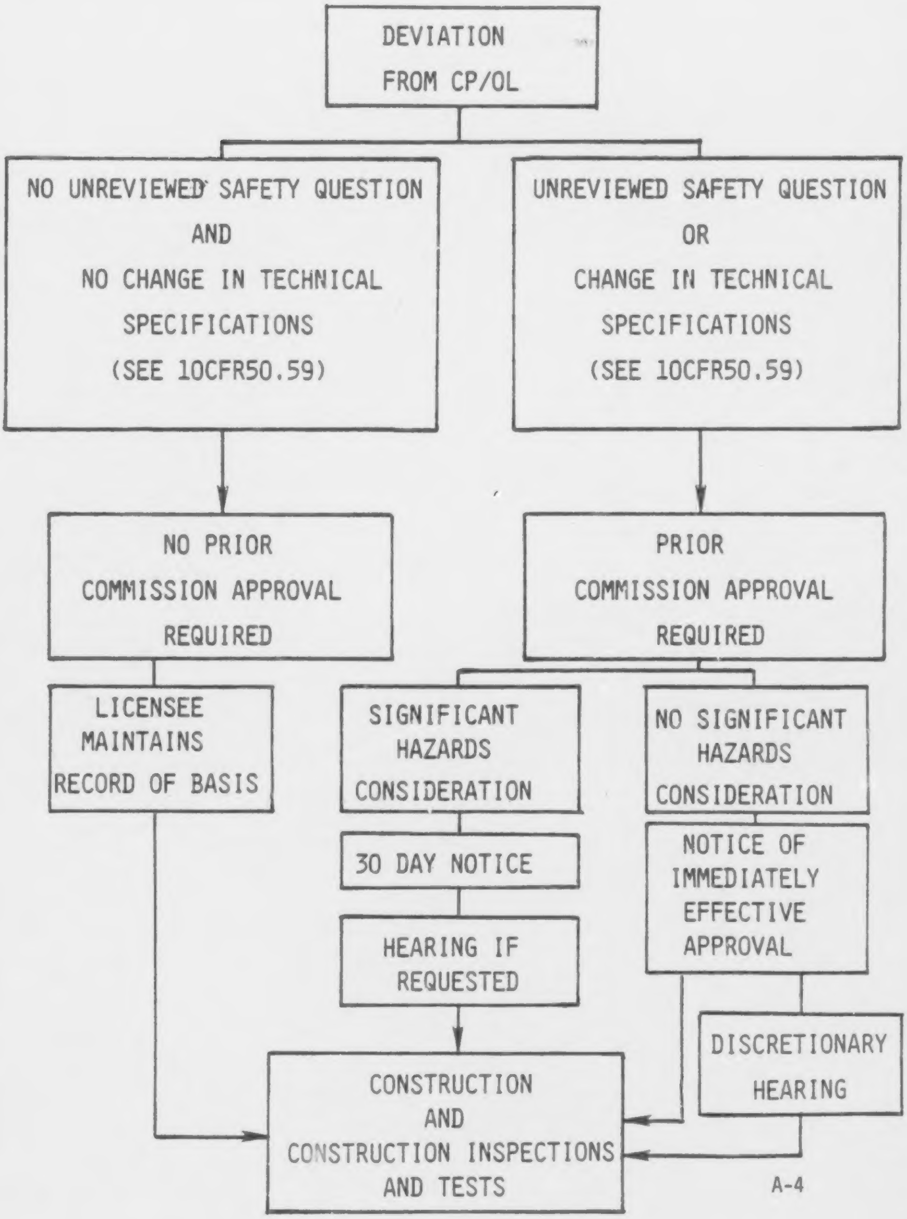
- PACKAGES OF SUPPORTING DATA MAINTAINED AVAILABLE FOR INSPECTION BY THE NRC TO SHOW THAT THE INSPECTIONS, TESTS AND ANALYSES HAVE BEEN PERFORMED AND THAT THE ACCEPTANCE CRITERIA HAVE BEEN MET.

- LICENSEE REVIEWS DEVIATIONS FROM CP/OL. OBTAINS PRIOR COMMISSION APPROVAL IF CHANGE IN TECHNICAL SPECIFICATIONS OR UNREVIEWED SAFETY QUESTION IS INVOLVED (NOTE: THIS TREATS CP/OL IN THE SAME MANNER AS 10CFR50.59 TREATS CHANGES, TESTS OR EXPERIMENTS IN OPERATING PLANTS).

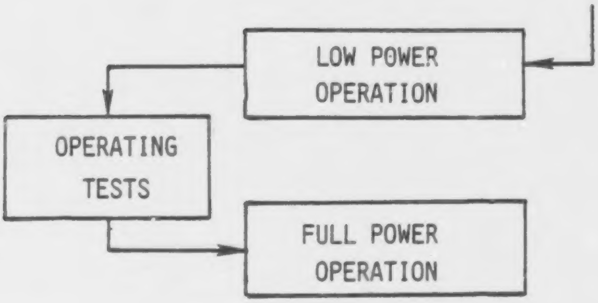
- OPPORTUNITY FOR HEARINGS - THIS WOULD BE GOVERNED BY SHOLLY AMENDMENT TYPE PROCEDURES.

- INSPECTIONS, TESTS AND ACCEPTABLE CRITERIA WOULD BE MODIFIED AND APPROVED IN THIS PROCESS.

DEVIATION PROCEDURE


DEVIATION FROM CP/OL
NO UNREVIEWED SAFETY QUESTION AND NO CHANGE IN TECHNICAL SPECIFICATIONS (SEE 10CFR50.59)
UNREVIEWED SAFETY QUESTION OR CHANGE IN TECHNICAL SPECIFICATIONS (SEE 10CFR50.59)
NO PRIOR COMMISSION APPROVAL REQUIRED
PRIOR COMMISSION APPROVAL REQUIRED
LICENSEE MAINTAINS RECORD OF BASIS
SIGNIFICANT HAZARDS CONSIDERATION
NO SIGNIFICANT HAZARDS CONSIDERATION
30 DAY NOTICE
NOTICE OF IMMEDIATELY EFFECTIVE APPROVAL
HEARING IF REQUESTED
DISCRETIONARY HEARING
CONSTRUCTION AND CONSTRUCTION INSPECTIONS AND TESTS
A-4

OPERATING PHASE



LOW POWER OPERATION

OPERATING TESTS

FULL POWER OPERATION

- LICENSEE CERTIFIES COMPLETION
- INSPECTION AND ENFORCEMENT RESOLVES OPEN ITEMS
- COMMISSION ACTION TO LIMIT OR DELAY OPERATION
    - ON OWN MOTION BASED ON DISCREPANCIES IN INSPECTION AND TEST RESULTS FROM PRE-ESTABLISHED ACCEPTANCE CRITERIA
    - REQUEST FOR ACTION UNDER 10 CFR 2.206

Westinghouse
Electric Corporation

Water Reactor
Divisions

J S Moore
Vice President & General Manager

Nuclear Center
Box 355
Pittsburgh Pennsylvania 15230

September 8, 1983

Honorable George John Mitchell
United States Senate
Washington, D.C. 20510

Dear Senator Mitchell:

This is in response to your letter of July 20th and the five additional questions relating to the backfitting and public hearing proposals contained in Senate Bills 893 and 894. I personally have participated extensively for many years of my professional career in design and evaluation of nuclear power plant safety systems as well as in contested licensing and rulemaking hearings. Based on this experience, I believe that the passage of these proposals, coupled with one-step licensing and standardized design and early site approvals, will serve the public interest and serve it well by enhancing protection of public health and safety while improving the effectiveness of public participation. Moreover, a Congressional mandate for an efficient and disciplined nuclear power plant licensing process is an essential ingredient to maintaining U.S. competitiveness in the international market place.

Backfitting

No one could be opposed to backfitting when the expenditure of time and resources for such actions are justified on the basis of the overall benefits to public health and safety. On the other hand, the absence of a rational evaluation process prior to imposing backfits and a cumulative effect of multiple backfits which proves adverse to overall safety should be a concern. There are numerous examples where backfits have not been justified prior to their imposition just as there are instances where backfits have been justified. On balance, however, we are concerned that many of these did not contribute to and may in fact have detracted from overall plant safety. For example, in 1980, the NRC required, as a backfit, installation of additional inspection ports in the steam generators of nine plants nearing completion of construction. This requirement, which involved cutting holes in the pressure retaining outer shells of the steam generators in the field, was ordered by the NRC without a rational evaluation of the overall effects on public health and safety. We took the position that there was no need for this requirement, and subsequently, after the backfit had been accomplished in several reactors, the NRC dropped this requirement. I could go on to cite other examples but the information you requested is amply covered in the pertinent section of the President's Private Sector Survey on Cost Control, and NRC report NUREG-0839, copies of which are enclosed.

In NUREG-0839, the NRC's own senior management conducted a study of backfitting reported in 1981. The NRC senior management found that many of these new requirements had not been adequately evaluated as to their impact on overall public health and safety. The study also found that the multiplicity of new requirements placed large numbers of workmen in operating plants which caused an increased opportunity for error and unintentional operational transients. Furthermore, the NRC senior management found that frequent and numerous modifications resulted in a continued need for retraining operators, which prevented the operators from developing a reliable base of experiences upon which they can rely during plant operations. Indeed, the primary recommendation of the NRC senior management in their report was that NRC take prompt action to bring the issuance of new requirements under better control.

Examples of improper backfits and debates over the efficacy or lack thereof of a particular backfit detract, however, from the larger question of whether or not the absence of effective regulatory controls and analyses of backfits is in the public interest. The NRC itself must admit that it does not know whether or not the majority of backfits that have been required can be justified on the basis of overall safety benefits because no rational evaluation was done. More importantly, they never considered the cumulative effects of backfitting, the diversion of limited resources from other activities important to overall safety and other indirect effects of backfitting which are adverse to safety. In the face of the huge total costs incurred by utilities and imposed upon the ratepayers to implement these backfits (estimates of $3 billion on 41 plants—25% of the initial costs of the plants), the current process can hardly be held to be in the public interest.

The experience of the last decade indicates that, unless there is a clear expression from the Congress for reform, the NRC will not take the actions that are necessary. The NRC has had a backfitting proposal under consideration for several years. They have yet to deal with this issue in a meaningful way—apparently, they cannot even bring themselves to enforce the existing backfit regulation which they admit has never been used by the NRC Staff. Even if the present Commission were to take firm action, there is no way of telling what future Commissioners might do absent some explicit guidance from Congress. This situation and the public interest in effective regulation make out a compelling case for Congressional action.

Combined Construction Permit/Operating Licensing and Public Benefits

In addition to the enhancement of the public health and safety decisionmaking, the licensing reforms contained in the proposed legislation would benefit the public in several ways. In this regard, the public should be defined to include both those who participate and those who, while not participating, are concerned about the cost and availability of electricity. We believe that the primary objection to the issuance of a combined CP/OL—that certain issues cannot be examined until just prior to the facility's operation—to be without merit.

The current process can satisfy no one except those who do not want the nation to retain the option of constructing new nuclear plants as a means of generating electricity. Although the current process provides two opportunities for public hearings, it actually foreshortens public participation when compared to a one-step format. The construction permit hearing is too early—before there is sufficient information available to fully evaluate the safety of the proposed facility; the operating license hearing is too late--after the plant is almost entirely constructed and billions of dollars have been invested. The current length of time it takes from the time a facility is planned until the time it becomes operational needlessly adds hundreds of millions, if not billions, of dollars to the cost of the plant, an amount which ultimately will be recovered in electrical bills. These delays are indeed caused in part by the licensing process and the threat of activating dilatory, undirected, obstructive litigation encouraged by the existing process. There are three significant disincentives to the provision of detailed design information in the existing process: (1) the added expense in terms of cost, time and resources which it would take to submit a detailed design prior to the issuance of the CP; (2) the essential meaninglessness of submitting such information given the substantial likelihood that the NRC would order major modifications to that design once construction began; and (3) the possibility that the design would be relitigated at the OL stage anyway.

I believe that utilities would be willing to undertake the expense of submitting a more detailed design earlier in the process if they could be assured that its consideration would be meaningful, as it would be under the one-step format. Conversations with utility executives confirm this view. There would be significant advantages to utilities under such a regime, the primary one being that it permits them to plan for the future with confidence. Under the current regulatory process, a utility ordering a nuclear plant does not know how much it will cost nor how long it will take to complete, two factors which I might add are interrelated. The longer it takes to build the plant, the more it will cost since the debt incurred will have to be financed over longer periods of time. For a plant nearing completion at the current time, interest charges alone are more than a million dollars a day.

The public would benefit greatly from a single early hearing on an essentially complete reactor design. Those members of the public who participated in the licensing process would have the opportunity to do so at a time when they can review a design for which all safety related requirements have been defined, yet before the time when billions of dollars have been spent on the facility so that significant changes in the plant are difficult, if not impossible to make. Consumers generally would benefit from less expensive plants. Not only would the plants cost less because of the fewer number of backfits which would be required during construction, but the plant would become operational more rapidly, thereby significantly reducing the time during which interest would have to be paid on the debt incurred to build the plant. Consumers also would benefit from the added assurance of having access to adequate supplies of electricity at reasonable rates to fuel regional economic growth.

Westinghouse believes strongly that the benefits of a one-step process are so substantial that it has initiated with the NRC a major licensing program to lead to one-step certification of the Westinghouse Advanced Pressurizer Water Reactor. Once this certification is complete, utilities will be able to provide the NRC an essentially complete design at the beginning of the licensing process (see the discussion of the St. Lucie plant in a later paragraph).

The major objection to the adoption of the one-step process raised before the subcommittee was that a second hearing prior to plant operations is required to examine certain issues. Indeed your fourth question states that "...emergency planning, management ability and operator training cannot be examined until near the completion of a plant...". We respectfully disagree with this premise.

Under the proposal contained in the DOE bill, an applicant receiving a combined CP/OL would have to satisfy a comprehensive list of requirements—consisting of tests, inspections and analyses each with a specific acceptance criteria—before the plant could be placed into operation. Any deviation from these requirements involving a significant hazards consideration would give rise to an opportunity for public hearings prior to final NRC approval.

There appears little basis for concluding that the issues of emergency planning, management ability and operator training cannot be dealt with in this context. Indeed, the early resolution of these issues would seem preferable. The time to determine whether emergency planning is feasible for a specific site is prior to the time billions of dollars have been spent to construct a facility. Likewise, the ability of a utility to manage the project should be concluded as early in the process as possible. If deficiencies in these areas are later found, the NRC and the public have ample opportunity to deal with the situation. As a practical matter, plant operators are licensed individually and not as part of the plant licensing process.

Does this process significantly curtail public participation? We believe it would enhance public participation. The public will retain the right to utilize Secton 2.206 of the Commission's regulations, which permits it to raise issues before the Commission in the absence of an ongoing licensing proceeding. Moreover, as noted above, any deviation from these requirements involving a significant hazards consideration would provide an opportunity for public hearings. This is an opportunity which does not exist today. At the current time, public participants—aside from using Section 2.206—must wait to raise these issues at the OL stage, which usually is too late to meaningfully address such issues. In addition, the public's right to participate in the hearing for the CP/OL means they can influence the comprehensive list of requirements which must be met before the plant will be place into operation. I would suggest this gives a public participant greater ability to affect the design of the facility than such a participant has under the current process.

For all these reasons, we believe that the adoption provisions of the DOE bill permitting the Commission to issue a combined CP/OL in one step would both benefit the public significantly and enhance the public's ability to participate in the process in a significant manner.

Hybrid Hearings

I am convinced, as are others in my organization who have had extensive experience in contested public hearings, that trial type proceedings are not well suited for determine the correctness of the engineering solutions to technical problems. Such engineering solutions involve expert judgement in the balancing of many competing factors. It is not a simple matter of right or wrong or of true or false. There can be any number of "right" answers each having its own set of advantages and disadvantages. This is further complicated by the fact that what is a disadvantage in one engineered system can be an advantage in another engineered system.

A trial-type process is aptly suited to the resolution of disputes of fact. It is not well suited to the assessment of differing expert opinions and judgements. This was the rationale behind the adoption by the Congress in its last session of a hybrid hearing process in the Nuclear Waste Policy Act of 1982. Both DOE and NRC have included this reform in their legislative proposals.

The rationale for the hybrid format is to provide trial-type procedures only where a party has raised a substantial issue of fact, where resolution of the factual issue is accurately resolvable only through a trial-type process, and resolution of the issue is essential to the licensing decision. The hybrid hearing moves away from legalistic process which thrives on the hyper-technicalities of the lawyer's art to more informal, more comprehensible and forthright presentation in a format which has been tried and accepted as promoting the solutions to scientific and engineering problems in the context of the free exchange of ideas and opinions. It is important to note that the range of issues that can be raised in the hearing is in no way reduced. Rather, a sharper focus on the relevance of the issues and its importance to licensing decisions is provided.

St. Lucie

St. Lucie Unit 2 was virtually identical to Unit 1. Several factors made a difference, all of which added up to a near-model construction and operational schedule. The St. Lucie Unit 2 design was upwards of 75% complete at the start of construction. The construction team that had constructed Unit 1 phased smoothly to Unit 2. The intervenor challenge was accommodated on the basis of more extensive, pre-tested data. And staff confidence in the design and construction was exemplified in the reduction of the preoperational safety review from the usual 30 months to nine. These are exactly the sorts of dynamics that will be brought to the licensing process by the one-step licensing format, standardization, and disciplined hearings proposed in the pending reform legislation.

The St. Lucie experience is consistent with foreign experience in which there has been standardization with more complete design information up-front and a one-step licensing process which includes a rational procedure for evaluating backfits utilizing cost-benefit methods and provides disciplined public participation early in the process.

In this connection, I want to emphasize what I said in my testimony before the Subcommittee about the proposed regulatory reforms being essential to our ability to remain competive in the international marketplace. Although there is a hiatus in domestic nuclear plant orders, there is a substantial international nuclear market. Our ability to maintain our leadership in that market is important from two standpoints in addition to the obvious economic benefits to the U.S. flowing from international orders for U.S. designed nuclear power plants. First, it ensures our ability to keep the teams of engineering talent intact and our designs up-to-date so that we will be able to respond when the domestic nuclear market returns. Second, it ensures that we will continue to be able to respond to our customers' need for services necessary to keep existing plants in operation. Action by the Congress will help to reverse declining U.S. competitive edge in this important international high-technology area.

Legislative Reform

We do not believe that, as a practical matter, the stability and certainty necessary for a viable nuclear option in the U.S. can be achieved without legislative action. For the reasons given in the discussion of backfitting, we believe the NRC is institutionally incapable of taking the firm actions that are necessary and sticking by them. Judge Malcolm R. Wilkey of the U.S. Court of Appeals for the District of Columbia Circuit in a recent speech said that the ultimate goal for those who want to keep nuclear power as an option must be to streamline the regulatory process to prevent it from being used to re-argue the policy decisions that Congress has already made. A Congressional affirmation of this is essential, given the retiscence of the NRC to undertake administrative reforms on their own initiative. Furthermore, the three major components of the proposed legislation—standardized design and early site approval and one-step licensing (with hybrid hearings)—are not separable. They are well balanced and complementary to one another. If any one is missing, the other two cannot provide the necessary stability and certainty to ensure that nuclear energy is an option when additional electric generating capacity becomes necessary.

I would welcome the opportunity to meet with you and members of your Staff sometime in the near future. Please advise me of your desires in this regard and I will make the necessary arrangements.

Very truly yours,

James S Moore

J. S. Moore

Enclosures

EXCERPT FROM PRESIDENT'S PRIVATE SECTOR SURVEY ON COST CONTROL

In an effort to understand the cost and schedule impacts of NRC regulation, last summer the Edison Electric Institute conducted a survey of nuclear plant operators. While it is not possible precisely to distinguish and quantify costs and delays caused by the regulatory process, as opposed to other reasons, the overall results of the survey suggest that the costs of regulatory changes for plants which have received licenses since 1970, or will soon receive a license, run to tens of billions of dollars.

The EEI survey shows that owners of 41 nuclear units that received operating licenses between January 1970 and December 1978 estimate that their total backfitting costs, after receiving their operating licenses, exceed $3 billion dollars, which is about 25 percent of the initial costs of these plants. Approximately $1 billion of these costs can be attributed to utility initiated backfits to improve operability and maintainability, $1.5 billion to NRC backfits not related to the TMI-2 accident, and $0.5 billion to NRC required backfits on TMI lessons learned. An additional $1 billion in backfits has been projected over the next few years to satisfy existing or expected NRC requirements. I do not suggest that the backfits are unjustified. Indeed, the fact that $1 billion of the backfits were utility initiated clearly shows that utilities recognize the appropriateness of plant improvement when new information warrants it. What the breakdown does show is that NRC imposed backfits constitute a significant portion of the facilities' overall costs. The imposition of billions of dollars' worth of changes, ultimately paid for by the same public whose interests are the professed object of the backfits, certainly warrants a systematic, analytical consideration of safety benefits.

As one example, the Oconee Power Station of Duke Power Company consists of three PWR nuclear units with a combined capacity of 2661 MWe. Commercial operation of the first unit was July 16, 1973, the second unit was September 9, 1974, and the third unit was December 16, 1974. Total cost of the units was $493 million, equivalent to $185 per KW. Backfitting costs for the three Oconee units through June 30, 1982 have been $179 million. These costs can be allocated as $142.2 million for NRC imposed backfitting other than TMI-related, $21.4 million for TMI lessons learned backfitting; and $15.2 million for utility initiated backfitting. An additional backfitting cost of $121 million is anticipated for the Oconee units to satisfy the existing and projected requirements of the NRC.

The NRC has made attempts in the past to estimate the costs for specific backfits. However, those costs are sometimes not accurate. For example, Northeast Utilities selected certain requirements from NRC's TMI Action Plan (NUREG-0660) and compared the NRC's cost estimates to the actual capital costs for implementing those requirements at its Haddam Neck Plant. The installation of Reactor Vessel Head Vents was estimated by the NRC to cost $100,000; in actuality it cost $1,102,000. System Integrity Review was estimated to cost $5,000 per plant by NRC; in actuality it cost $1,144,000. By contrast, the NRC estimated that a Plant Shielding Review would cost $50,000; instead it cost $6,000. Northeast Utilities concluded: "[H]ad the NRC performed realistic Value-Impact Analysis on recent TMI Action Plan requirements and properly weighed cost against benefit, a number of requirements would not be justified in terms of increased plant safety." These examples do not instill confidence that all of the billions of dollars spent on backfitting to improve safety have been spent to the best advantage.

EEI has examined the cost and schedule increases experienced by plants currently coming on line as compared to earlier units. The cost of units surveyed by EEI increased from an average of $169 per KWe in the 1970-72 period, to an anticipated range of $587 to $3,062 per KW for 23 units coming on line between January 1980 and December 1983. The total cost estimate of the 23 plants when they received their construction permits was $11.6 million. The estimate of last summer had increased to $35.5 billion, an increase greater than a factor of three. These numbers show cost increases far beyond the impact of normal inflation and escalation. An examination of construction times showed that the normalized average period between construction permit and operating licenses increased from an average of 80 months per 1000 MWe in 1970-72 to an average of 103 months per 1000 MWe for the 23 surveyed plants coming on line between January 1980 and December 1983.

A comparison of costs and time to construct the Zion and Byron power stations illustrates the impact of the unstable regulatory environment. Each station has two pressurized water reactors of about the same size, from the same manufacturer, were designed by the same architect-engineer and were constructed by the same contractor. Zion cost $582 million, took 52 months to construction, and began commercial operation in October 1973. Byron is estimated to cost $2,764 million, take 92 months to construct, and begin commercial operation in February 1984. While inflation and the high interest rates are contributing factors, the utility estimated that about 60 percent of the cost increase is the result of NRC regulatory changes. A comparison of the costs of the Oconee, McGuire and Catawba stations of Duke Power Company shows a similar result. All these stations are pressurized water reactors, designed and constructed by Duke Power Company. The costs of Oconee may be used as a benchmark for comparison of the regulatory cost impact on the later units. Practically all the materials were purchased and most of the labor performed for Oconee before 1974. Thus, conservatively, the actual Oconee station cost of $185 per KW can be taken to represent 1973 dollars. By using the Bureau of Labor Statistics inflation factors and adjusting the number to account for three units at the Oconee station, the 1982 value of an equivalent Oconee plant cost would be about $445 per KW for a two unit plant. Since a primary difference between 1973 and 1982 other than inflation is the regulatory environment, a majority of the additional costs for the McGuire and Catawba stations may be assigned as a regulatory impact. While a portion of the added costs are the results of changes desired by the utility, it is conservatively estimated that at least 60 percent of the increase is the result of NRC regulatory changes. The additional cost in 1982 dollars for the McGuire Station is $1,893 million and for the Catawba Station is $2,345 million. A 60 percent regulatory impact is $1,136 million for McGuire and $1,407 million for Catawba. This added regulatory impact on McGuire and Catawba is about 40 percent of the total station 1982 equivalent value.

There is little doubt that the unpredictability of NRC actions and regulatory changes were major contributors to the increases experienced at all of the plants now coming on line. And, since there has never been an identified acceptable regulatory safety goal and no measurable basis of safety or cost/benefit analysis provided for the many regulatory changes, the true safety value of what we have bought for our plants is unknown. Safety must be provided, but safety is ill-served by the instability of the licensing and regulatory processes.

TESTIMONY
TO
UNITED STATES SENATE
SUBCOMMITTEE ON NUCLEAR REGULATION

MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE: I AM MILTON LEVENSON, AN EXECUTIVE ENGINEER FOR BECHTEL POWER CORPORATION, SAN FRANCISCO, CALIFORNIA. I WISH TO EXPRESS MY APPRECIATION FOR THIS OPPORTUNITY TO COMMENT ON THE SUBJECT OF NUCLEAR LICENSING AND REGULATORY REFORM.

MY TESTIMONY IS BASED ON A PERSONAL BACKGROUND OF ALMOST 40 YEARS IN NUCLEAR DEVELOPMENT AND ENGINEERING, INCLUDING 25 YEARS AT THE ARGONNE NATIONAL LABORATORY (ANL), SEVEN YEARS AT THE ELECTRIC POWER RESEARCH INSTITUTE, AND 2-1/2 YEARS AT BECHTEL. I AM ALSO CURRENTLY THE PRESIDENT-ELECT OF THE AMERICAN NUCLEAR SOCIETY. WHILE I HAVE NEVER WORKED FOR THE NRC (OR THE AEC), I HAVE HAD SIGNIFICANT PERSONAL EXPERIENCE IN THE SAFETY REVIEW PROCESS, HAVING CHAIRED THE ARGONNE NATIONAL LABORATORY SAFETY REVIEW COMMITTEE FOR MORE THAN A DECADE (EARLY 1950'S TO LATE 1960'S) - A PERIOD DURING WHICH MAJOR SAFETY REVIEW RESPONSIBILITY RESIDED WITHIN THE LABORATORY. DURING THIS TIME, OUR COMMITTEE REVIEWED AND WAS RESPONSIBLE TO THE LABORATORY DIRECTOR OF ANL FOR THE SAFETY OF THE FIRST BOILING WATER REACTORS (BORAX AND EBWR), THE FIRST LMFBR (EBR I) AND LATER EBR II, THE SL-1 MILITARY REACTOR, AND MANY OTHER FIRST-OF-A-KIND REACTORS OR REACTOR SYSTEMS. THAT EXPERIENCE PERSONALLY IMPRESSED ME WITH THE DIFFICULTY THAT MOST TECHNICAL PEOPLE (INCLUDING MYSELF) HAVE IN SEPARATING REAL MATTERS OF PUBLIC SAFETY FROM THOSE INVOLVING INDIVIDUAL DESIGN PREFERENCE; I.E., "I WOULD LIKE TO DO IT DIFFERENTLY." THIS MAY NOT SEEM TO BE RELEVANT TO THE ISSUE BEFORE THIS COMMITTEE, BUT I BELIEVE IT IS

BASIC. IT HAS IN FACT LED TO THE FREQUENT USE OF THE TERM "SIGNIFICANT SAFETY" AS A MEANS OF DIFFERENTIATING REAL SAFETY FROM PERSONAL DESIGN PREFERENCE.

I BELIEVE THAT THE PRIMARY OBJECTIVE OF ALL OF US SHOULD BE TO ASSURE THE STABLE, SECURE, AND AFFORDABLE SUPPLY OF ELECTRICITY SO ESSENTIAL FOR THE STABILITY AND SECURITY OF OUR COUNTRY. TO THE EXTENT AND IN THOSE LOCATIONS WHERE NUCLEAR POWER PLANTS OFFER THE MOST STABLE, SECURE, AND/OR ENVIRONMENTALLY BENIGN AND ECONOMIC SOLUTION, SUCH PLANTS BECOME AN ESSENTIAL INGREDIENT IN MEETING THAT OBJECTIVE. IN THIS CONTEXT, WE MUST ATTEMPT TO SET ASIDE PERSONAL PREFERENCES AND STRIVE TO DEVELOP AND IMPLEMENT A REGULATORY AND LICENSING SYSTEM THAT ENCOMPASSES THE NEEDS OF THE PUBLIC, THE RESPONSIBILITIES OF THE REGULATORS, AND THE RESPONSIBILITIES OF THE UTILITIES AND THE INDUSTRY BY ADDRESSING THE ISSUES OF PUBLIC HEALTH AND SAFETY IN A TECHNICALLY SOUND AND ADMINISTRATIVELY STABLE MANNER. CHANGE FOR THE SAKE OF CHANGE, REVISED REGULATIONS FOR THE SAKE OF REVISION, OR REACTIVE CHANGES BECAUSE A QUESTION HAS BEEN ASKED ARE ALL PERCEIVED TO EXIST IN PRACTICE IF NOT IN THE LEGAL SUBSTANCE OF THE REGULATORY PROCESS AND SERIOUSLY INTERFERE WITH ACHIEVING ANY OF OUR OBJECTIVES.

I WOULD SUM UP MY PERSONAL FEELINGS BY SAYING THAT THE CURRENT REGULATORY LICENSING PROCESS FOR CIVILIAN NUCLEAR

POWER PLANTS IS NOT SATISFACTORY - IT IS UNSTABLE AND IT IS NOT SHARPLY FOCUSED ON ISSUES OF PUBLIC HEALTH AND SAFETY. AS A RESULT, EVERYONE IS WORKING VERY HARD AND SPENDING SUBSTANTIAL AMOUNTS OF MONEY ON MATTERS THAT CONTRIBUTE LITTLE, IF ANYTHING, TO THE PRIMARY OBJECTIVE. THE CONSUMER IS IN DANGER OF BECOMING THE ECONOMIC VICTIM OF INTELLECTUAL JOUSTING OVER TRIVIA. PERHAPS EVEN MORE IMPORTANT, THIS REPRESENTS PEOPLE AND MONEY BEING DIVERTED FROM THE IMPORTANT OBJECTIVES OF INCREASED PLANT RELIABILITY AND REDUCED PLANT COSTS WITH NO INCREASE IN PUBLIC SAFETY.

IT IS NOT MY INTENT TO COMMENT ON THE SPECIFIC WORDING OF THE TWO PROPOSED BILLS CURRENTLY BEING REVIEWED, BUT RATHER TO COMMENT ON WHAT WE BELIEVE TO BE THE IMPORTANT ISSUES AND ON WHY WE BELIEVE NUCLEAR LICENSING AND REGULATORY REFORM IS NECESSARY.

MR. CHAIRMAN, YOUR INVITATION IDENTIFIED SEVERAL SPECIFIC QUESTIONS THAT WERE TO BE ADDRESSED AND THE FOLLOWING COMMENTS FOLLOW THE FORMAT OF THOSE QUESTIONS:

1. QUESTION ONE:

> "PLEASE PROVIDE A DETAILED SUMMARY OF YOUR VIEWS ON WHETHER THE EXISTING PROCESS FOR THE LICENSING AND REGULATION OF COMMERCIAL NUCLEAR POWER PLANTS HAS PROVEN TO BE AN EFFECTIVE MEANS FOR REGULATION OF THE

COMMERCIAL NUCLEAR POWER INDUSTRY, AND, IN PARTICULAR, WHETHER THIS PROCESS HAS RESULTED IN:

(A) PREDICTABLE, STABLE REGULATION;

(B) AN EFFECTIVE OPPORTUNITY FOR PUBLIC PARTICIPATION;

(C) AN INCREASE, OVER TIME, IN THE QUALITY OF DECISIONS RENDERED BY THE NRC; AND

(D) AN APPROPRIATE FRAMEWORK FOR EFFICIENT RESOLUTION OF HEALTH, SAFETY, AND ENVIRONMENTAL ISSUES."

ANSWER ONE:

(A) WE BELIEVE THAT CURRENT REGULATION IS NEITHER PREDICTABLE NOR STABLE. THE CURRENT SITUATION MAKES ANY ATTEMPT TO MOVE TOWARD EVEN PARTIAL STANDARDIZATION IMPRACTICAL. UNLESS A CRITERION OR REQUIREMENT IS CONSTANT FROM ONE NRC REVIEW GROUP OR REGION TO ANOTHER, AND FROM ONE YEAR TO THE NEXT, IT IS EXTREMELY DIFFICULT TO PLAN AND OPERATE EFFICIENTLY AND THE TERM "STANDARD" HAS LITTLE MEANING. IF A UTILITY HAS TWO OR THREE NUCLEAR POWER PLANTS THAT ARE OPERATING WELL AND SAFELY AND THEY CANNOT LOOK FORWARD TO REPLICATING ANOTHER IDENTICAL UNIT, THERE IS NO STABILITY. IF THE

DECISIONS RENDERED BY A LICENSING BOARD HAVE NO PRECEDENCE STATUS AND THE IDENTICAL ISSUES (WITH NO NEW DATA) CAN BE RAISED ON ANOTHER PLANT OR EVEN AT A LATER STAGE WITH THE SAME PLANT, THERE IS NO STABILITY.

(B) THE VERY FACTORS THAT LEAD TO INSTABILITY WOULD SEEM TO DILUTE PUBLIC PARTICIPATION AND REDUCE ITS EFFECTIVENESS. IF PUBLIC RESOURCES ARE SPREAD OVER MULTIPLE CASES OF THE SAME QUESTION, EFFECTIVENESS MUST BE REDUCED. AN IN-DEPTH REVIEW (WITH SUITABLE APPEAL PROCESSES) WITH PRECEDENCE STATUS HAS SERVED THIS COUNTRY'S POPULATION WELL IN MOST LEGAL MATTERS AND WOULD PROBABLY SERVE THE PUBLIC MORE EFFECTIVELY THAN THE PRESENT LICENSING PROCESS. AS JAMES TOURTELLOTTE POINTED OUT IN A RECENT SPEECH - THE ROGOVIN REPORT INDICATED THAT THERE IS LITTLE OR NO EVIDENCE THAT THE HEARING PROCESS IN ANY WAY CONTRIBUTES TO OVERALL PLANT SAFETY. FOR THOSE FEW PEOPLE WHOSE OBJECTIVE IS TO DELAY RATHER THAN RESOLVE, THE PRESENT PROCESS IS VERY EFFECTIVE.

(C) BECAUSE OF THE CHANGING NATURE OF THE NRC, IT IS NOT POSSIBLE TO SAY THAT THE QUALITY OF ITS DECISIONS ARE IMPROVING. THIS IS PART OF THE

PROBLEM OF INSTABILITY AND UNPREDICTABILITY MENTIONED EARLIER. AS NRC STAFF DECISIONS AND REGULATIONS BECOME MORE SPECIFIC AND MORE PRESCRIPTIVE, THEY BEGIN TO INTERFERE IN A SUBSTANTIVE WAY WITH THE NORMAL ENGINEERING PROCESS. TODAY, MANY DESIGNS AND OPERATING PROCEDURES ARE STRUCTURED TO MEET NRC REQUIREMENTS RATHER THAN BEING STRUCTURED FOR THE BEST PRACTICE!

(D) A PROCESS WITH NO PRECEDENCE STATUS CANNOT RESOLVE ISSUES OF ANY KIND SINCE THE SAME ISSUES CAN BE BROUGHT UP TIME AFTER TIME EVEN THOUGH NO NEW INFORMATION IS AVAILABLE.

B. QUESTION TWO:

"TO WHAT EXTENT, IF ANY, WILL THE LEGISLATIVE RECOMMENDATIONS SUBMITTED BY THE NUCLEAR REGULATORY COMMISSION AND THE DEPARTMENT OF ENERGY RESULT IN IMPROVEMENTS IN THE EXISTING PROCESS, IN EACH OF THE FOUR AREAS IDENTIFIED IN QUESTION ONE?"

ANSWER TWO:

THE COMPLEXITY OF THE ISSUE MAKES THIS A DIFFICULT QUESTION TO ANSWER DIRECTLY, ESPECIALLY SINCE THE NRC AND DOE RECOMMENDATIONS DIFFER IN MANY CASES.

INSTEAD, I WILL ATTEMPT TO LIST WHAT WE BELIEVE SHOULD BE SOME OF THE OBJECTIVES OF THE REVISED LEGISLATION:

(A) PROVIDE FOR EFFECTIVE PUBLIC PARTICIPATION AT AN EARLY STAGE. THIS REQUIRES A STABLE REGULATORY ENVIRONMENT SO THAT THE DESIGNER CAN FIRM UP HIS DESIGN CRITERIA, METHODS, AND CONCEPTS AND PRESENT THEM FOR BOTH NRC AND PUBLIC SCRUTINY. IF CONSTANTLY CHANGING CRITERIA AND CHANGING INTERPRETATIONS REQUIRE SIGNIFICANT OR SAFETY-RELATED* DESIGN CHANGES THROUGHOUT THE PROJECT'S HISTORY, THE PUBLIC CANNOT PARTICIPATE EFFECTIVELY AT AN EARLY STAGE, AND PERHAPS NOT AT ALL, BECAUSE OF THE EXTENDED TIME SCHEDULE.

(B) ALL REQUIRED BACKFITS AND ALL REVISIONS TO REGULATORY GUIDES AND REGULATIONS SHOULD BE SUBSTANTIATED AS BEING REQUIRED TO REDUCE PUBLIC RISK.

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*SAFETY-RELATED DOES NOT NECESSARILY MEAN SAFETY IMPROVEMENT - IT ONLY MEANS A CHANGE TO A SYSTEM THAT IS IDENTIFIED AS A SAFETY-RELATED SYSTEM - IT COULD ACTUALLY BE A DECREASE IN SAFETY AND STILL BE IDENTIFIED AS SAFETY-RELATED.

(c) SOME VERSION OF ONE STEP LICENSING IS PROBABLY ESSENTIAL BEFORE ANY NEW PLANTS WILL BE ORDERED. SINCE THE OBJECTIVE IS TO MINIMIZE THE AMOUNT OF NEW MATERIAL REVIEWED BY BOTH THE NRC AND THE PUBLIC, COMPLETE PLANT REPLICATION OR MAJOR SYSTEM REPLICATION, OR COMPLETION OF PLANTS ALREADY REVIEWED MUST BE RECOGNIZED AS ACCEPTABLE ALTERNATIVES TO ANY NEW CONCEPT.

(D) LICENSING AND REGULATION SHOULD BE REVISED SO AS TO FOCUS ON PUBLIC SAFETY (A GOOD AUTOMOBILE DRIVER WHOSE LICENSE HAS ACCIDENTALLY EXPIRED IS IN VIOLATION OF THE LAW BUT HE IS NOT A PUBLIC RISK WHILE A POOR DRUNK DRIVER WITH A VALID LICENSE CERTAINLY IS A PUBLIC RISK). THE CURRENT PROCESS DOES NOT DIFFERENTIATE ADMINISTRATIVE LICENSING REQUIREMENTS FROM REAL PUBLIC SAFETY REQUIREMENTS.

C. QUESTION THREE:

"TO WHAT EXTENT, IF ANY, CAN THE RECOMMENDATIONS THAT HAVE BEEN PROPOSED BE ACCOMPLISHED THROUGH ADMINISTRATIVE ACTION BY THE NRC, RATHER THAN THROUGH LEGISLATION? IN WHAT AREAS, IN PARTICULAR, DO YOU SUPPORT:

(A) LEGISLATIVE CHANGES;

(B) ADMINISTRATIVE CHANGES; OR

(C) NO CHANGES, IN THE CURRENT LICENSING PROCESS?

WHAT RATIONAL IS THERE FOR CONSIDERING AND ADOPTING LEGISLATIVE REFORMS IN THOSE AREAS THAT CAN BE ADDRESSED ADMINISTRATIVELY?"

ANSWER THREE:

PROBABLY ALL OF THE PROPOSED RECOMMENDATIONS COULD BE ACCOMPLISHED THROUGH ADMINISTRATIVE ACTION - BUT THEY HAVE NOT BEEN DONE. MORE IMPORTANT, ADMINISTRATIVE ACTIONS THAT CHANGE ONE MONTH CAN CHANGE BACK THE NEXT MONTH. LEGISLATIVE REQUIREMENTS NOT SUBJECT TO CHANGE BY A SINGLE INDIVIDUAL WOULD BE A MAJOR IMPROVEMENT. IT IS ALSO IMPORTANT THAT CONGRESS CLARIFY ITS POSITION ON THE MATTER OF PUBLIC SAFETY VERSUS ADMINISTRATIVE LICENSING REQUIREMENTS, ESPECIALLY AS IT APPLIES TO NRC POLICY ON THE ASSESSMENT OF FINES. OVER THE YEARS, THE LICENSING PROCESS HAS BECOME MORE AND MORE FORMALIZED, MORE AND MORE LEGALIZED, AND THE INTERFACE BETWEEN PUBLIC SAFETY ISSUES AND OTHER ISSUES HAS BEEN ERODED AWAY.

IN SUMMARY, I BELIEVE WE ARE FACING A SITUATION WHERE WE ALL AGREE ON THE OVERALL OBJECTIVES AND WE ALL AGREE THAT THE

PRESENT SYSTEM IS NOT ACHIEVING THOSE OBJECTIVES. WE PROBABLY DO NOT AGREE ON HOW BEST TO SOLVE THIS DILEMMA, BUT SOLVE IT WE MUST. I BELIEVE IT IS APPROPRIATE FOR THE CONGRESS TO TAKE THE LEADERSHIP ROLE AND PROVIDE THAT LEGISLATION REQUIRED TO STABILIZE NUCLEAR REGULATION AND LICENSING. AT THE SAME TIME WE MUST FIND A WAY TO SET ASIDE TRIVIA AND ITS ASSOCIATED LARGE COSTS TO THE PUBLIC WITHOUT SETTING ASIDE PUBLIC SAFETY AND AGAIN I BELIEVE IT IS APPROPRIATE FOR CONGRESS TO EXPRESS ITS INTENT AND TO PROVIDE THE LEGISLATION THAT WILL MAKE IT HAPPEN.

APPENDIX - GENERAL COMMENTS

THE NUCLEAR POWER INDUSTRY OBJECTIVE IS MORE GENERAL THAN NORMALLY PERCEIVED. THAT OBJECTIVE IS TO HELP PROVIDE THE UNITED STATES WITH A STABLE, RELIABLE, AND AS INEXPENSIVE AS POSSIBLE SUPPLY OF ELECTRICITY TO SUPPORT ECONOMIC GROWTH, NATIONAL SECURITY, AND RESIDENTIAL AND INDUSTRIAL NEEDS. FROM A PURELY TECHNICAL STANDPOINT, NUCLEAR POWER PLANTS PROVIDE ONE OF THE MOST DESIRABLE MEANS OF SUPPORTING THIS GOAL. ONE NEED ONLY CONSIDER THE COST AND SAFETY RECORD OF OUR DOMESTIC NUCLEAR CAPACITY OR OBSERVE THE NUCLEAR POWER PROGRAMS OF OTHER COUNTRIES WHERE NATIONAL ENERGY POLICIES DICTATING CHEAP, SAFE, AND ABUNDANT ELECTRIC POWER SUPPLY HAVE RESULTED IN THE EXPANDED, AND IN SOME CASES EXCLUSIVE, USE OF NUCLEAR POWER TECHNOLOGY.

SECOND, U.S. UTILITY PLANNERS AND EXECUTIVES ARE PAINFULLY AWARE THAT, INDEPENDENT OF THE TECHNICAL ATTRIBUTES OF NUCLEAR POWER FACILITIES, INSTABILITY OF THE REGULATORY AND LICENSING PROCESS AND THE RESULTING UNCERTAINTIES IN COST AND SCHEDULE DO NOT ALLOW NUCLEAR POWER PLANTS TO BE SERIOUSLY CONSIDERED AS AN OPTION FOR CAPACITY EXPANSION OR REPLACEMENT TODAY. ONE ARGUMENT OFTEN HEARD IS THAT IF THERE ARE NO NEW DOMESTIC PLANT ORDERS, WHY SHOULD CHANGES IN THE LICENSING OR REGULATORY PROCESS BE CONSIDERED IMPORTANT? IT IS VERY IMPORTANT TO DO WHATEVER IS POSSIBLE NOW TO INCREASE REGULATORY STABILITY AND DECREASE THE COST

OF NUCLEAR POWER PLANTS. THE INDUSTRY IS WORKING ON THE CHALLENGING TASK OF REDUCING PLANT COSTS THROUGH STANDARDIZATION, STATE-OF-THE-ART ENGINEERING AND CONSTRUCTION TECHNIQUES, NEW MANAGEMENT TOOLS, FUEL OPTIMIZATION, AND OTHER PROGRAMS TOO NUMEROUS TO MENTION HERE.

THE REASONS FOR SPIRALING ENGINEERING, CONSTRUCTION, MANAGEMENT, OPERATING, AND MAINTENANCE COSTS ARE MORE CLOSELY ATTRIBUTABLE TO CHANGES TO PLANTS RATHER THAN TO THE BASIC NATURE OF THE PLANTS THEMSELVES.

WITH THE PASSAGE OF TIME, THE REPETITIVE JOB OF REVIEW HAS TENDED TO FOCUS ON THE MORE ADMINISTRATIVE ASPECTS OF THE ISSUANCE OF REGULATIONS AND GUIDES, REVIEWING LICENSEE RESPONSES TO THESE REGULATIONS AND GUIDES AND MAKING SURE THAT THE PAPER TRAIL IS COMPLETE. THIS FOCUS ON THE LICENSING ASPECTS DIVERTS RESOURCES FROM THE PRIMARY OBJECTIVE OF ASSURING THE ACTUAL HEALTH AND SAFETY OF THE PUBLIC. THE REGULATIONS AND GUIDES (AND THEIR INTERPRETATIONS) ARE IMPLEMENTED BY USE OF ADMINISTRATIVE ACTION BY THE NRC AND ARE THEREBY SUBJECT TO CHANGE, ESCALATION, OR REINTERPRETATION AS THE NRC ORGANIZATION CHANGES, PERSONNEL CHANGE, OR MERELY DUE TO THE PASSAGE OF TIME. WHILE THE EXISTING FRAMEWORK OF NRC ADMINISTRATIVE ACTION IS PROBABLY ADEQUATE TO GUIDE THE NRC STAFF ON SHORT-TERM TASKS, THE CURRENT 7 TO 12 YEAR SCHEDULE FROM CONSTRUCTION PERMIT TO COMMERCIAL OPERATION REQUIRES A

MORE STABLE MEANS OF ASSURING THAT ANY CHANGES REQUIRED IN A PLANT ARE FOR THE IMPROVEMENT OF PUBLIC HEALTH AND SAFETY AND ARE NOT JUST CHANGES OBSCURED BY THE TERM SAFETY-RELATED. CHANGES INTENDED TO JUST "DO IT ANOTHER WAY" OR TO USE A DIFFERENT COMPUTER CODE MUST BE ELIMINATED. LEGISLATIVE ACTION IS ONE MEANS BY WHICH SUCH STABILITY CAN BE ACHIEVED.

THERE ARE THREE TYPES OF DESIGN CHANGES REQUIRED BY REGULATION OR NEW LICENSING REQUIREMENTS: 1) THOSE MADE ON COMPLETED PLANTS, OFTEN CALLED BACKFITS, 2) THOSE REQUIRED DURING CONSTRUCTION OF PLANTS, AND 3) THOSE REQUIRED FOR A NEW GENERATION OF PLANT FOR WHICH ENGINEERING HAS NOT BEEN SUBSTANTIALLY DONE. WE HAVE ALL BEEN MOST OUTSPOKEN ON THE NEED THAT ANY BACKFIT REQUIREMENT BE JUSTIFIED ON THE BASIS OF COST AND BENEFIT, AND WE MIGHT STRESS THAT FOR REGULATORY PURPOSES, THE BENEFIT SHOULD BE RELATED TO PUBLIC HEALTH AND SAFETY; THE FINANCIAL RISK TO THE UTILITY SHOULD BE A COMMERCIAL, NOT AN NRC, ISSUE. THE ISSUE OF THE ACTUAL COST OF A CHANGE FOR PLANTS SEEKING AN OPERATING LICENSE IS MANY TIMES A MOOT ARGUMENT, SINCE THE COSTS ASSOCIATED WITH THE RESULTING LICENSING DELAY NORMALLY GREATLY OVERSHADOW THE COST OF THE REQUIRED CHANGE AND ACCOMPLISH NO REAL INCREASE IN PUBLIC SAFETY.

WE WOULD LIKE TO GO ON RECORD AS REQUESTING THAT REQUIRED CHANGES FOR FUTURE GENERATIONS OF PLANTS BE GIVEN THE SAME COMMISSION SCRUTINY FOR PUBLIC SAFETY IMPACT AS PROPOSED FOR

BACKFITS. THIS IS IMPORTANT IF THE INDUSTRY IS TO MEET A NATIONAL OBJECTIVE TO KEEP THE PLANTS AFFORDABLE.

EXISTING PLANTS WITH YEARS OF ACTUAL EXPERIENCE CAN (WITH ONLY MINOR CHANGES THAT EXPERIENCE SHOWS WILL IMPROVE PLANT RELIABILITY AND AVAILABILITY) BE REPLICATED WITH SIGNIFICANT BENEFITS IN COST, SCHEDULE, AND QUALITY. NEW PLANT CONCEPTS AND DESIGNS START OVER ON THE LEARNING CURVE AND TEND TO TAKE LONGER TO BRING TO A HIGH LEVEL OF EFFICIENCY. THE INDUSTRY ITSELF HAS BEEN RESPONSIBLE FOR MUCH OF THIS DURING THE LAST FIFTEEN YEARS - IT IS TIME THAT WE ALL WORK TOGETHER TO SUPPRESS THE "TECHNICAL PRIDE OF AUTHORSHIP" THAT CAUSES CHANGE BECAUSE "I PREFER IT THIS WAY" EVEN THOUGH IT DOES NOT AFFECT PUBLIC HEALTH AND SAFETY.

ONE EXAMPLE OF THE BENEFITS OF REPLICATION IS ARIZONA PUBLIC SERVICE COMPANY'S 3-UNIT PALO VERDE PLANT. THIS PROJECT WILL REALIZE A 10-YEAR SCHEDULE ON UNIT 1; CURRENT PROJECTIONS ARE FOR A 16 PERCENT PRODUCTIVITY ENHANCEMENT ON UNIT 2 OVER UNIT 1, AND FOR UNIT 3, A 32 PERCENT IMPROVEMENT OVER UNIT 1. IT IS BELIEVED THAT IF THE LICENSING PROCESS CAN BE STABILIZED, THE UNIT 3 PERFORMANCE COULD BE MAINTAINED AT OTHER SITES ON REPLICATED PLANTS. STABILITY IN THE REGULATORY AND LICENSING PROCESSES IS ESSENTIAL IN ALLOWING THE INDUSTRY TO ACCOMPLISH THE OBJECTIVES OF REDUCING COSTS AND SCHEDULES WHILE IMPROVING QUALITY.

THE NEXT ITEM WE WOULD LIKE TO DISCUSS IS THE PRESENT VEHICLE FOR PUBLIC PARTICIPATION IN NUCLEAR REGULATION - THE HEARING PROCESS. THE EXISTING HEARING PROCESS DOES NOT APPEAR TO BE SERVING THE BEST INTERESTS OF THE GENERAL PUBLIC. IT DOES PROVIDE A MECHANISM FOR SMALL SPECIAL INTEREST GROUPS TO DELAY THE LICENSING PROCESS AT THE RATEPAYER'S EXPENSE.

THE DOCKET-BY-DOCKET REHEARING OF THOSE GENERIC CONTENTIONS THAT HAVE NO REAL SIGNIFICANCE TO PUBLIC HEALTH AND SAFETY IS A DISSERVICE TO THE AMERICAN PUBLIC. COST ESCALATION AND DELAYS ARE THE PRIMARY RESULTS OF THESE HEARINGS. WHILE THE EXISTING CIVIL JUSTICE SYSTEM HAS ITS SHORTCOMINGS, THE CONCEPT OF PRECEDENTS BEING ESTABLISHED THAT PRECLUDE A CASE FROM BEING RETRIED WITHOUT INTRODUCTION OF NEW EVIDENCE SHOULD SERVE AS AN EXAMPLE FOR THE NUCLEAR HEARING PROCESS. THE STRICT ADHERENCE TO A HEARING POLICY THAT ONLY ADMITS ISSUES INVOLVING PUBLIC HEALTH AND SAFETY IS ESSENTIAL TO THE OVERALL REGULATORY AND LICENSING STABILITY PREVIOUSLY DISCUSSED.

IN DISCUSSING REGULATORY STABILITY AND THE HEARING PROCESS, WE HAVE ALREADY EXPRESSED SOME OF OUR OBSERVATIONS CONCERNING THE OVERALL TREND IN THE QUALITY OF DECISIONS RENDERED BY THE NRC. WHILE THERE IS NOW EVIDENCE FROM WITHIN THE COMMISSION OF A DESIRE TO PRIORITIZE ISSUES ON THE BASIS OF SAFETY SIGNIFICANCE AND TO CLARIFY THE INTENT

OF SUCH TERMINOLOGY AS "IMPORTANT TO SAFETY," THERE CONTINUES TO BE AN OVERALL OBSESSION WITH THE LETTER OF THE REGULATIONS AT THE EXPENSE OF VERIFYING COMPLIANCE WITH THE INTENT OF THE REGULATIONS.

THE COMBINED CONSTRUCTION PERMIT AND OPERATING LICENSE PROVISIONS OF THE PROPOSED BILLS ARE A STEP IN THE RIGHT DIRECTION TO ACHIEVE THE NECESSARY STABILITY OF THE LICENSING PROCESS. HOWEVER, THERE IS DOUBT AS TO WHETHER THE NRC VERSION OF THE BILL WILL MAKE ANY REAL IMPROVEMENT OVER THE EXISTING LICENSING PROCESS. THE NRC VERSION OF THE BILL REQUIRES A POSITIVE FINDING BY THE COMMISSION PRIOR TO COMMENCEMENT OF THE OPERATION OF THE FACILITY THAT WOULD REQUIRE HEARINGS BEFORE MAKING SUCH A FINDING. IF THE ISSUES ARE RESOLVED AT THE ORIGINAL PERMIT STAGE AND ANY NEW PUBLIC HEALTH OR SAFETY ISSUES ARE RESOLVED BY A PROCESS FOR BACKFITTING REQUIREMENTS, THERE WOULD NOT APPEAR TO BE ANY JUSTIFICATION FOR FURTHER HEARINGS PRIOR TO OPERATION. UNLESS THERE ARE GROUNDS FOR THE COMMISSION TO ISSUE AN ORDER PROHIBITING OR LIMITING OPERATION, THE PLANT SHOULD BE ALLOWED TO COMMENCE OPERATIONS. THE LICENSEE CERTIFIES THAT THE PLANT IS COMPLETE AND SATISFIES THE LAWS AND REGULATIONS, AND THE AUDIT PROCESS BY THE I&E BRANCH OF THE NRC ASSURES THAT THE PLANT IS CONSTRUCTED AS DESIGNED.

A MAJOR IMPROVEMENT WOULD BE THE USE OF OTHER AGENCIES TO MAKE THE DETERMINATION OF THE NEED FOR POWER WHICH WOULD BE BINDING ON THE COMMISSION. THE USE OF OTHER AGENCIES FOR

THIS EFFORT WOULD ELIMINATE THE DUPLICATION OF THE EFFORTS CURRENTLY CARRIED OUT BY THE NRC STAFF. THIS WOULD FREE UP RESOURCES THAT THE NRC COULD USE FOR ITS PRIMARY RESPONSIBILITY, THE DETERMINATION OF THE IMPACT OF PLANTS ON PUBLIC HEALTH AND SAFETY.

THE REFORM PROPOSALS HAVE PROVISIONS FOR EARLY SITE APPROVAL AND PREAPPROVAL OF DESIGNS, I.E., STANDARDIZATION. THESE PROVISIONS COULD PROVIDE STABILITY IN THE REGULATIONS. HOWEVER, WE BELIEVE THAT TOTAL PLANT OR "COOKIE CUTTER" STANDARD IS NOT PRACTICAL FOR THE U.S. - PLANTS IN THE WEATHER CONDITIONS OF MINNESOTA ARE DIFFERENT THAN PLANTS IN FLORIDA, PLANTS WITH SEAWATER COOLING ARE DIFFERENT THAN PLANTS WITH FRESHWATER COOLING; PLANTS BUILT ON ROCK ARE DIFFERENT THAN PLANTS BUILT ON HARD CLAY, ETC.

WHAT CAN BE ACHIEVED ARE STANDARD CRITERIA, STANDARD DESIGN METHODS, STANDARD ANALYSIS METHODS, A STANDARD LAYOUT FOR EACH VENDOR'S PLANT, STANDARD SYSTEMS FOR EACH VENDOR'S PLANT - IN FACT, ALMOST EVERYTHING EXCEPT SITE-SPECIFIC FACTORS SUCH AS FOUNDATION DESIGNS, COOLING WATER SOURCE CONSIDERATIONS, AND WEATHER CONDITION AND PLANT TYPE (BWR, W-PWR, CE-PWR, ETC.) CONSIDERATIONS. IF REGULATORY STABILITY ALLOWED SUCH A DEVELOPMENT, THE NRC INSPECTION/REVIEW FUNCTION FOR PLANT CONSTRUCTION WOULD BE THE SAME AS FOR A REPLICATED PLANT - DOES THE

CONSTRUCTION CONFORM TO THE PLAN. THE CONSTRUCTION PERIOD ISSUES ARE THEN ONLY THOSE OF INSPECTION AND NOT THE RESOLUTION OF THE COMPLEX ISSUES OF DESIGN, SYSTEM, CONCEPT, ETC. IN ADDITION, IT SHOULD BE POSSIBLE TO STANDARDIZE PARTS OF PLANTS AND TO REPLICATE PARTS OF PLANTS. THE DOE BILL DOES PROVIDE A PROVISION FOR GETTING "PORTIONS" OF THE DESIGN APPROVED RATHER THAN THE WHOLE PLANT, AND WE STRONGLY SUPPORT THAT CONCEPT.

THE EXISTING PROCESS OF TWO-STEP LICENSING HAS NOT REALLY BEEN A TWO-STEP PROCESS. IT HAS RESULTED IN AN ALMOST CONTINUOUS REGULATORY REVIEW AND IMPOSITION OF NEW REQUIREMENTS DURING THE ENTIRE CONSTRUCTION PERIOD. THIS CONSTANT IMPOSITION OF NEW REQUIREMENTS (GENERALLY NOT REVIEWED AND SUBSTANTIATED AS NECESSARY FOR PUBLIC HEALTH AND SAFETY) HAS RESULTED IN A LACK OF STABILITY IN DESIGN DURING CONSTRUCTION, SLIPPAGE OF CONSTRUCTION SCHEDULES, AND INCREASES IN THE COST OF THE PLANTS AND THE RESULTING INCREASES IN THE COST OF ELECTRICITY TO THE PUBLIC. THERE SHOULD BE DISCIPLINED, DOCUMENTED JUSTIFICATION FOR THE IMPOSITION OF NEW OR MODIFIED REQUIREMENTS AND A HIGH LEVEL REVIEW OF EACH SUCH JUSTIFICATION.

STATEMENT OF
WILLIAM J. L. KENNEDY, SENIOR VICE PRESIDENT
STONE & WEBSTER ENGINEERING CORPORATION

Stone & Webster

Subcommittee on Nuclear Regulation
Committee on Environment and Public Works
United States Senate
June 14, 1983

STATEMENT OF
WILLIAM J. L. KENNEDY, SENIOR VICE PRESIDENT
STONE & WEBSTER ENGINEERING CORPORATION

SUBCOMMITTE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
JUNE 14, 1983

Mr. Chairman and members of the Subcommittee:

My name is William Kennedy and I am a Senior Vice President and Manager of the Cherry Hill (New Jersey) Operations Center for Stone & Webster Engineering Corporation. With me is Mr. James T. Ramey, Vice President and Senior Energy Advisor to the Chairman of our Board of Directors. We have both previously testified before the Congress on these issues before us today, Mr. Ramey before the House Subcommittee on Energy and Power, Committee on Interstate and Foreign Affairs in July 1978, and I before the House Subcommittee on Energy Research and Production, Committee on Science and Technology in May 1979. Mr. Ramey also has the distinction of having served longer than any other Commissioner of the Atomic Energy Commission where he was the "lead" Commissioner for licensing and regulation issues.

We appreciate your invitation to appear today to express our views, as an engineer-constructor of nuclear power plants, on the bills S.893 and S.894 which would amend the process by which the Nuclear Regulatory Commission (NRC) regulates those plants. At the outset, let me commend the action of both the NRC and the Administration, acting through the Department of Energy (DOE), in submitting this proposed legislation to the Congress. We are firmly convinced that improvement of the licensing process to create an environment of predictability and reasonable certainty as to licensing schedules and costs and assurance of adequate safety reviews is an essential ingredient of a total climate in which utilities will once again consider placing new orders for nuclear power plants. At a time when approximately one-half the cost of a plant, ultimately borne by the consumer, is a function of the time involved as reflected in interest and inflation, such planning ability is imperative. In this respect, may I associate us with the general testimony you have heard earlier on behalf of the American Nuclear Energy Council and the Atomic Industrial Forum, as we are a member of both organizations.

Stone & Webster Engineering Corporation is a pioneer in nuclear plant standardization. We began our efforts on standardization in the late 1960's and have participated in the NRC standardization program since its inception in 1972. We have chaired the Atomic Industrial Forum Subcommittee dealing with standardization since its inception. We were the first engineer-constructor to receive approval from the NRC of a "reference" balance of plant design, in May 1976, matching a specific nuclear steam supply system. This was, of course, a Preliminary Design Approval.

Attaining our first Preliminary Design Approval was the result of a commitment of hundreds of our engineering and design personnel over a decade to a project dedicated solely to this reference design. This effort included not only development of engineering, but also construction planning to ensure that the design was as efficient to construct as possible. Independent reviews by experienced engineers to critique the design were also performed.

Our reference design also benefitted from input on such matters as operability from experienced utilities. NRC approval of this design required many meetings between our project engineering management personnel and NRC staff to reach satisfactory conclusions on complex technical issues.

Since receipt of the Preliminary Design Approval in May 1976, we have subsequently had our balance of plant design approved relative to two additional reference nuclear steam supply system designs and a fourth is still pending before the NRC. These approvals required additional engineering of our reference design to provide the proper match with the particular nuclear steam supply system. Our reference design was used in the first application, submitted by New York State Electric & Gas Corporation and Long Island Lighting Company, for a construction permit which incorporated both previously approved nuclear steam supply system and balance of plant designs. This application was, unfortunately, withdrawn by the utility due to reduced power demand.

We have also been active in other types of NRC standardization programs such as the Topical Report Program. We have received NRC approval for topical reports on minor subsystems for the reference nuclear power plant, on an independent spent fuel storage facility, and on various software. In addition, we were the first engineer-constructor to receive, in 1974, NRC approval for a standard nuclear Quality Assurance Program.

It is our opinion that licensing reform legislation is greatly needed because the current statutory licensing procedures were developed when nuclear technology was in its infancy. Experience indicates that, in practice, this process has proven to be cumbersome and uncertain, lacking in stability, and unnecessarily costly to the consumer, the regulators, and the industry. In this regard, the present licensing process diverts scarce regulatory and industry resources from uses that would better serve safety aims.

The proposed legislation is directed at providing a more predictable, timely, and resource-efficient licensing process--one which matches industry design and regulatory review capabilities and meets utility planning needs. A new process would better serve the interests of all parties with a stake in sound reactor licensing--industry, regulators, and the public at large.

From our perspective as an engineer-constructor, perhaps the most significant aspects of the proposed legislation are the provisions for approval of designs for major portions of a plant prior to the application for a license to build and operate a specific plant, and a single-stage licensing process to consider applications.

The proposed legislation would produce the following benefits:

- The safety of nuclear power plants would be ensured and enhanced by procedural improvements that will permit and encourage a greater focus on the significant questions pertaining to nuclear safety.
- The current nuclear plant cycle of twelve or more years would be greatly reduced when the several reform steps are fully implemented.
- The costly, duplicative regulatory reviews and formal proceedings now required for each facility at the operating license stage would be eliminated.
- Utilities could plan for new capacity on the basis of a pre-approved site and design, confident that regulatory requirements would not shift in mid-stream. The excessive time and uncertainty entailed in NRC staff review of the full range of design and site considerations, now dealt with on a facility-by-facility basis, would be eliminated.
- Regulatory stability and predictability would be greatly enhanced, and costs correspondingly reduced, by putting ~~strict but~~ responsible limits on backfitting and changes.
- Public hearings would take place at a timely point (before construction) in the licensing and siting processes and provide the most appropriate opportunity for public participation.

The key to accomplishing these goals is the pairing of single-stage licensing with nuclear plant standardization. It is important to note that the proposed legislation would provide for and encourage standardized designs and single-stage licensing, but would not preclude custom designs. We concur with the need for this flexibility.

We believe that without legislation, Stone & Webster Engineering Corporation would not be able to most efficiently utilize resources we have expended and will commit to in the future to maintain the nuclear power option.

The principal impact of the legislation must be to help create the confidence among utilities and the public that there is, in fact, a reasonable and effective process for the licensing and regulation of nuclear power plants. Utilities will consider nuclear power plants as a viable option only when there is an available product that has been proven to be licensable and the process is stable.

As to the two bills before your Subcommittee, we generally tend to favor the approach reflected in the DOE bill (S.894) more than the treatment of some issues in the NRC bill (S.893).

Before addressing specifics of the proposed bills, I would like to say a few words on the need for standardization and the discipline needed to make it work. We believe standardization can contribute positively in a number of ways. Repeated design, construction, and manufacturing techniques and procedures permit increased efficiency, resulting in higher quality and that translates to greater safety. Another significant advantage of standardization is the reduction in the number of plant design variations with which plant operators and operational support teams would have to be familiar. This would ensure increased operator capability. Standardization will permit greater concentration of specialized talents on more detailed safety considerations. Extensive front-end engineering is often preferable to in-process development as it occurs without the pressure of a plant completion schedule. Because of favorable cost impact, the additional benefit of lower power costs to the public is also achieved by standardization.

Part of our standardization program includes a standard Quality Assurance Program which is employed from the outset of the design through component manufacture and plant construction to ensure a finished product of high quality. The NRC audits and inspects the implementation of our standard Quality Assurance Program.

In the construction of a plant, we have learned that standardization pays handsome dividends. Detailed work processes involving parallel paths and repetitive operations yield a higher degree of skills and, therefore, improved quality. We have also standardized our construction methods and procedures, such as material controls, handling and storage, steel erection, and concrete placement.

Nuclear plant standardization must carry with it the discipline of regulatory stability. This discipline must be exercised by everyone concerned with the engineering, design, licensing, and construction of a nuclear power plant. "Everyone," in this case, includes the utility, the engineer-constructor, the reactor manufacturer, and federal and state regulatory authorities. After millions of dollars have been spent developing a standardized reference plant, few benefits are gained when that design is revised. Regulatory stability is needed to impose order on the process of changing a nuclear plant design. Undisciplined change prevails under the current multi-stage licensing process; undisciplined change comes from changes in regulatory requirements, from a "better mousetrap" approach to engineering design, and from a change in basic design. However, a marginal or unnecessary change never remains minor. Efforts previously performed must be undone and redone, and the cost and schedule benefits of standardization are quickly lost. Too often, changes imposed on a plant are not justifiable in terms of public safety or of cost effectiveness. Unnecessary change has occurred frequently in the past when regulatory requirements were changed after issuance of a permit or license and the licensee was required to adhere to new rules. It is the combination of standardized reference designs and change control that will establish the much needed stability under the proposed single-stage licensing process.

In this regard, the approach to backfitting requirements in the DOE bill, as stated in the new Section 29a of the Atomic Energy Act, fulfills this need. It is in the public interest to weigh the enhancement in the overall level of health and safety to the public against the cost to the public. This balancing will greatly stabilize Design Approvals and enhance standardization. It will also stabilize the entire industry, from plants under construction to plants in operation. The backfit requirements are basic to the continued viability of the nuclear industry and should be applied throughout all phases of design, operation, and regulation. In this light, the DOE bill backfit provisions should be applied when considering Design Approvals for renewal.

We heartily support the basic concept embodied in both bills to provide a new and improved method for approval of standard designs that can be referenced when a utility chooses to build a plant, although the NRC could do so through existing rulemaking procedures. However, existing procedures do not ensure public participation prior to NRC approval nor do they provide the necessary stability for the approval for it to be a viable option to a utility.

Under the new system, the developer of a design for a nuclear plant or major portion of a plant would submit a Safety Analysis Report with an application for a Design Approval. The applicant could be either a reactor manufacturer, an engineer-constructor, a utility, or any combination of these. The application could describe a nuclear steam supply system or a balance of plant, as was the practice under the reference system option of existing NRC standardization policy. An entire plant could also be described as was done under the manufacturing license, duplication, and replication options of this NRC standardization policy.

We endorse the use of a balance of plant matched with a nuclear steam supply system because it is consistent with the well-tested and long-standing practices in the nuclear industry. This can be implemented with minimal perturbation on the industry and the regulator.

We recommend that the final legislation direct, rather than merely authorize, the NRC to establish procedures for approval of both facility and major subsystem designs. This will ensure establishment of procedures to provide maximum flexibility and use of pre-approved designs. Use of this approach will also ensure that the significant amount of expertise now within existing engineer-constructors and reactor manufacturers would not be lost and there would be no loss of continuity in maintaining safe operation of plant designs already in use.

Under the proposed legislation, an engineer-constructor's Safety Analysis Report for a balance of plant application for a Design Approval would describe and provide all of the design bases and safety analyses required for the balance of plant design and its interrelationship with one or more specific nuclear steam supply systems. The Safety Analysis Report would also describe the envelope of site parameters, such as soil characteristics, seismic levels, and atmospheric dispersal characteristics, within which the design is to be used.

The balance of plant Safety Analysis Report and the NRC staff Safety Evaluation Report, including the results of the Advisory Committee on Reactor Safeguards review, would form the basis for a public hearing. This process affords the public a substantial and timely opportunity to participate prior to construction of any plant. At the successful conclusion of the hearing, a Design Approval would be granted by the NRC for the balance of plant design. Similarly, for reactor manufacturers, Design Approvals would be issued for nuclear steam supply systems. In a like manner, Early Site

Approvals would be granted by the NRC. All of these approvals will have received full review by the NRC and full involvement by the public in the decision-making process.

When a utility decides to apply for a Construction and Operating License, it could take an approved balance of plant and an approved nuclear steam supply system and couple the plant to an approved site. Very few issues would arise in a Construction and Operating License proceeding, because all that needs to be decided by the NRC is that the previously approved designs with their envelopes and site-specific details are compatible with the previously approved site. Again, these proceedings provide substantial and timely opportunity for public participation.

With a Construction and Operating License, which includes programs and plans for site-specific considerations, the licensee would be able to complete the plant in an orderly and predictable manner.

We believe no need exists for an additional hearing prior to operation which is implicit in the requirement for an affirmative "finding" by NRC as provided in the NRC bill. Requiring NRC to make a preoperational "finding" would effectively continue the planning uncertainties of the present two-stage licensing process. Moreover, the NRC, as part of its current authority to protect public health and safety, can order a hearing at any time it deems necessary. We believe the certification process in the DOE bill is preferable.

We generally endorse the provisions of the DOE and NRC bills providing for the issuance of a Construction and Operating License. In fact, the Standard Design Approval concept, first proposed by us in September 1977 and adopted by NRC in 1978, provided for a ready progression to a single-stage licensing process. We fully support the NRC bill's provision that directs the NRC to establish the necessary procedures to enable applicants to obtain a Construction and Operating License. We note the DOE bill does not include such a provision but only specifies that the NRC may issue a Construction and Operating License.

During the past decade, the licensing process has been lengthened considerably by many factors, with a large portion attributable to duplicative and redundant reviews by the NRC staff and the unnecessarily repetitive and time-consuming, two-stage licensing process. It is our belief that a single-stage licensing process, including the issuance by NRC of a Construction and Operating License, will shorten the licensing process, reduce plant costs, and provide a substantive safety review.

An important facet of the single-stage licensing process is determining the extent and level of design information necessary for the NRC to determine that a plant is designed and can be constructed and operated in conformity with the provisions of the Atomic Energy Act and the NRC's rules and regulations. The extent and level of detail necessary to support a single-stage licensing process is greater than that currently required for a Preliminary Safety Analysis Report but less than that now required for a Final Safety Analysis Report. We believe an in-between level of design information, i.e., a considerably greater level of design detail in many areas than a current Preliminary Safety Analysis Report but less than a current Final Safety Analysis Report, would be sufficient and reasonable for the NRC to reach a conclusive safety determination. This design level requires criteria and standard specification and design methods which are verifiable by the NRC, as necessary, during procurement and implementation of the design.

Much of the Final Safety Analysis Report detail is not available until equipment orders have been placed and vendors' information has been provided that permits finalization of design. To ensure competition, this information should not be included in a Construction and Operating License application; to do so would raise antitrust concerns. To include such information would also require that purchase contracts be signed and financial commitments made many years in advance of equipment need. This is more frequently true for a balance of plant design than for a nuclear steam supply system, since the nuclear steam supply system designer is also the manufacturer of a significant amount (but not all) of the nuclear steam supply system equipment.

Detailed process and instrumentation drawings and elementary electric diagrams could be included in the Safety Analysis Report, with performance specifications of manufacturer-related items. System designs would, in effect, be frozen. Detailed descriptions of methodology (such as testing and computer modeling), explaining how equipment would be qualified, would be included. This approach will provide sufficient design information at the Construction and Operating License stage for the NRC to determine that the proposed plant meets applicable safety requirements.

Information currently required at the Final Safety Analysis Report stage that is not necessary for a Construction and Operating License would be made available for NRC inspection by regional inspectors during plant construction. NRC should, of course, only audit during plant construction to verify that the design, as licensed, is being properly implemented. Such verification activities would encompass such items as seismic certifications of equipment test results and equipment environmental qualification data. No NRC re-review of analyses or design methodology would be required during this verification audit.

We further endorse the concept of an Early Site Approval process. We suggest that legislation state clearly that an applicant may describe, in total or in part, an acceptable environmental impact for a particular site without the necessity of specifying the plant design. This would provide the applicant with the flexibility of constructing one or more facilities on a particular site so long as the cumulative environmental impacts associated with those facilities remain within the previously approved acceptable site-related impacts. Both bills merely authorize the NRC to issue Early Site Approvals. We believe that NRC should be directed to establish the procedures for granting such approvals.

We support the use of the hybrid hearing process as proposed in the DOE bill because it requires that procedure, as opposed to only permitting its use as provided in the NRC bill. In our view, the highly technical nature of the majority of the issues involved does not lend itself to a formal (adjudicatory) hearing format. The present trial-type hearing serves neither the purpose of meaningful public participation nor that of sound decision-making on safety issues. An informal (legislative) format is more appropriate, except in cases where substantial factual matters are in dispute.

Let me conclude by summarizing our responses to the questions you posed in your letter of June 7. As indicated earlier, we believe the existing process for licensing and regulation of nuclear power plants is neither predictable nor stable. The proposed legislation, and particularly the DOE bill, will improve the process considerably by providing for early approval of designs and sites and focusing the hearing and resolving of disputes at one point in time through a more efficient procedure. The proposed revisions should also improve the opportunity for public participation in the process while minimizing the potential for abuse of the process by those bent only on delay. Because of these improvements, it is our view that the quality of NRC decisions in the resolution of health, safety, and environmental issues is likely to be further enhanced by passage of such legislation.

While it is certainly arguable, as a legal matter, that a number of the proposed changes could be accomplished by administrative action, we submit that since they would be departures from long-standing policy and practice, they would likely encounter considerable resistance and, perhaps, challenge in the courts. I refer, for instance, to employing hybrid hearings. Other aspects clearly require changing the law, such as the single-stage hearing for a Construction and Operating License. Given this situation, we are convinced that making all of the changes by law will ensure maximum certainty in the minimum of time, which is our common goal.

We appreciate the opportunity to present these views and express the hope that your Committee and the Congress will act soon to enact these improvements so important to ensuring the availability of nuclear power as a critical element in the nation's supply of electricity.

We still believe that nuclear power must play an important role in contributing to the nation's available electric energy capability. We are convinced that efforts to stabilize and bring predictability to the licensing process will advance the realization of that goal. We support enactment of this legislation and urge the Congress to act on this important matter.

This concludes my remarks on these bills, Mr. Chairman. My colleague and I would be happy to respond to your questions.

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Honorable George J. Mitchell
United States Senate
Washington, DC 20510

August 29, 1983

Dear Senator Mitchell:

Your letter of July 20, 1983 asked for certain information relating to the need for nuclear licensing reform, particularly single-stage licensing. This letter provides that information and answers (Attachment 1) the additional written questions you submitted for witnesses at the June 14, 1983 hearing of the Senate Subcommittee on Nuclear Regulation, Committee on Environment and Public Works.

I will first address your question relating to the hearing process and its effect on nuclear plant schedules. I am concerned not with the use but with the abuse of the hearing process. Today's Atomic Safety and Licensing Board hearing process is not being used as was originally intended. The purpose of the hearing is to resolve disputes, not to discuss issues previously resolved, nor to review plant design. Current intervenor strategy is to use hearings as vehicles to promote their opinions and biases through the news media or as a source of free education for themselves at the expense of the public.

The scope and duration of hearings have consistently increased over the last two decades. The typical number of in-court hearing days has risen from a few days to several weeks or months. My experience has been that few, if any, improvements in plant design or levels of reliability and safety have resulted directly from these longer and more complex hearings.

The support of hearings requires the personal involvement of top management and technical experts from a project team. Hearing support outside of the courtroom (prehearing conferences, formalization of contentions, responding to board orders and intervenor requests, preparation of written testimony and oral presentation, filing of Findings of Fact and Conclusions of Law) represent the bulk of the effort. In the current two-stage licensing process, these individuals are required to support and participate in hearings both prior to the start of construction and prior to scheduled plant operation. These are very critical times in a nuclear plant schedule when management and technical experts should be engaged in designing, constructing and managing a safe plant, rather than defending issues which have been previously resolved.

The hearings for Houston Lighting and Power Company's Allens Creek nuclear plant provide a case in point. In 1982, the Department of Energy (DOE) conducted a study to evaluate the lead times for light water reactor plants. I quote from that study:

> Houston Lighting and Power Company (HLP) reported that the principal cause of delay in obtaining a construction permit for their Allens Creek unit was the litigative nature of public hearings and the related intervenor's ability to extensively drag out proceedings. HLP has a clipping on file from a counterculture newspaper inviting readers to file as an Allens Creek intervenor with free legal help. Over 100 intervenors applied to the NRC. HLP was fortunate to get this number reduced to the 12 who were admitted to intervene. Each intervenor took advantage of their right to unlimited questions of HLP witnesses. Approximately 85 to 90 minor issues were raised. They included growing kelp and converting it to methane gas as an alternative, and the impact of Allens Creek on crappies, one of the largest fish populations in Texas. One issue was raised a few days after it appeared in another hearing. This one dealt with system components (cooling towers) not contemplated for Allens Creek (which uses cooling lakes).
>
> Even after reaching a coordinated position with NRC, HLP plans to allow at least three to four years before the Atomic Safety and Licensing Board in any future construction permit proceedings on the assumption that an applicant is lucky to get one week per month of hearing time and the litigative process consumes so much time. This process has cost Texas ratepayers billions of dollars. By comparison, a recent EPA hearing on environmental impact of a large coal plant lasted 77 minutes.

DOE, in its study, also contacted the NRC licensing project managers. The NRC Project Manager for Allens Creek, who was assigned to the plant from the start, made the following observations:

> The hearing process was considerably lengthened by the persistence of one individual intervenor who read the NRC staff's Safety Evaluation Report and raised all the issues contained therein. The apparent precedent is that the same issues can be raised at each hearing if a member of the local public expresses concern about the issue, even though the issues have been addressed in other hearings. There was apparently no questioning of the technical background of the intervenor, but an in-depth education was provided for him by the many NRC and utility staff required to respond to all the allowed contentions. This is a very costly way of providing this kind of an education. Does the individual non-technical member of the public have to understand the basis of the findings or can the educated board members make the finding that yes, this is a good issue, but that it has been considered in-depth and was adequately addressed in other similar proceedings?

Long Island Lighting Company's (LILCO) Shoreham nuclear power plant Atomic Safety and Licensing Board hearing provides another example of extensive hearing delays. By the time the construction permit was issued on August 14, 1973, (39 months later than predicted by LILCO), six prehearing conferences and 70 days of testimony had been held. Seven ASLB board orders, 116 witnesses, thousands of interrogatories, and approximately 15,000 pages of transcripts were compiled. Environmental hearings resulted in another 6,000 pages of transcripts. Shoreham's operating license stage hearings are on a similar course. Not one, but three ASLBs have been appointed. More than 20,000 pages of transcripts have been compiled from these hearings which began more than 15 months ago and are still in progress. Similar vintage, but uncontested, plants (e.g., FitzPatrick which started operating in 1975) have not experienced such a delay. It is difficult to argue that the duration of hearings regarding Allens Creek and Shoreham has not affected the eventual commercial operation dates of these plants (Allens Creek has been cancelled and Shoreham's commercial operation date has slipped by almost 10 years).

Despite the above evidence, unequivocal proof that a lengthy and protracted hearing delays the commercial operation date is not the real issue. The question at hand is whether or not the public's interest is being best served by hearing proceedings like those of Allens Creek and Shoreham. I think the answer is no and that is why I support improvements in the hearing process.

There are other indirect impacts of a protracted hearing. One is the impact on overall plant cost. As I stated in my testimony, about half of the plant cost is a function of time involved, as reflected in interest and inflation. Hearings take time and time costs money. As the duration of the licensing process has increased, utilities have necessarily adjusted their schedules and priorities to minimize the associated impacts on the scheduled fuel load date, i.e., overall construction schedules have been lengthened. License applications are submitted much earlier (3 or more years vs. 1 year prior to fuel loading as was the case of 10 years ago). Often, expectations of extended hearings and the attendant uncertainties cause utilities to reduce their labor force and delay the engineering effort to reduce expenditures. The extent and duration of contested hearings are unpredictable and thus synchronizing completion of plant design and construction with license availability is difficult to achieve. The resultant situation creates the impression that the applicant has complained unreasonably since the plant is not ready for license anyway. In reality, the applicant has responded to the uncertainties generated by the licensing process so as to minimize direct expenditures while accepting increased indirect expenditures, such as interest.

Another indirect impact of the hearing process is that issues raised at one set of hearings are often raised by NRC staff during its review of one or more subsequent applications to prevent further litigation. This would provide little, if any, cause to complain if a reasonable safety issue were identified. However, under the present system, applicants accede to laboriously address many of these issues even though little or no safety significance has been identified by NRC to support the need for change. The issue is addressed on the basis that the financial impact of addressing it is less than the cost of a lengthened schedule caused by the litigation required to determine its validity or usefulness.

If nuclear power is to be a viable source of electricity, the current hearing process must be sharpened and better focused. The admission of hearing issues must be tested against a benchmark, meaningful to public health and safety. I support the DOE licensing reform legislation which provides such a benchmark. This proposed legislation specifies hybrid hearings, limited to significant issues. Since highly technical issues do not involve questions of truth or falsity, they do not lend themselves to a formal (adjudicatory) hearing format. An informal (legislative) format is suggested as more appropriate, except in cases where substantial factual matters are in dispute.

The proposed DOE legislation provides for a single-stage licensing process with the public hearing up front where it belongs. If agreement is reached on the bases for design, construction and operation at this hearing, these bases need not be reviewed again unless a significant safety problem is shown to exist. This control over changes is a needed and natural outgrowth of the single-stage licensing process.

The second point you raise deals with the issue of "unnecessary" backfits. This issue is, at the very least, a sensitive one. Many people perceive nuclear plants as inherently unsafe. This perception is intensified by the apparent need to continually modify plants as directed by NRC. As a result, any suggestions by the nuclear industry that an NRC-ordered modification is unnecessary becomes immediately suspect. Safety improvements in non-nuclear industries are measured by the reduction of loss of life or limb. Since commercial nuclear plants have not caused any nuclear-related deaths or serious injuries, safety improvements must be measured in less tangible terms by the reduction of the theoretical potential to do bodily harm. Nuclear safety improvements are measured by identifying and then reducing both the likelihood of the occurrence of postulated accidents and the calculated potential for adverse health effects from such events. Certainly, some backfits can significantly improve safety and are therefore prudent and necessary. However, far more often, improvements to safety from required backfits are minimal.

The NRC has recently concluded, in its NUREG-0839, that the full significance of the backfit issue may have been underestimated by its staff. It is virtually impossible to say that, although it may not be quantifiable, a specific backfit requirement did not provide some improvement to safety. Indeed, since NRC itself admits to not following its own regulations which require showing a substantial safety benefit prior to imposing a backfit requirement, no meaningful analysis of safety requirements exists. Without specific guidance or instructions from (or even within) NRC on how the significance of, and thus the need for, backfits is determined, we cannot in good conscience make that determination, regardless of our own beliefs. Many backfit requirements have been imposed without adequate consideration of their overall impacts. The potential therefore exists for a net negative impact on safety as backfits may complicate plant operations.

If government is a servant to the people, then it is accountable for costs imposed on the public as well as for benefits provided. A major aspect of the backfit concern is that a given modification may not sufficiently improve safety to justify the cost of implementation. Modifications required by regulators impose a cost as well as provide a benefit to the public. It is appropriate that the benefit accrued be commensurate with that cost. Utilities must be responsible to their ratepayers as well as to their stockholders and the general public. Numerous concerns must be weighed and balanced against each other in determining the utility's response to a given requirement. The costs associated with the implementation of a given requirement, as well as the net impact to nuclear safety it affords, must be considered. To date, we have seen little effort by NRC to weigh costs against benefits prior to imposing a requirement. Costs are not considered, while benefits are qualitatively perceived rather than quantitatively evaluated.

Unproven staff requirements imposed during the time close to and concurrent with hearings result, whether intentionally or not, in the license being held hostage to the utility's acquiescence. Imposition by NRC of unproven new or modified requirements at these critical times, and those unproven requirements which force unscheduled plant shutdowns, result in the backfits which are the most wasteful in terms of financial impact.

A result of the imposition of backfit requirements imposed by NRC without adequate consideration of all safety impacts associated with them is that many of these requirements are then modified after further consideration, thus increasing costs associated with their implementation. For example, high energy pipe line break criteria were promulgated in 1972, and were subsequently modified, expanded, and imposed on certain construction stage plants. Operating plants and most near-term operating license plants were not required to be modified accordingly. This led to confusion in the mid-1970s as to which criteria applied to which plants, and resulted in additional costs and delays to at least one plant under construction. Interestingly, NRC now appears to recognize that the extensive use of pipe restraints, required as a result of those pipe break criteria, may not have been necessary and, in fact, may even have increased the likelihood of pipe breaks, and left many pipes and components nearly uninspectable. A more detailed discussion appears in Attachment 1 in response to Question 1.

The single-stage licensing process proposed by the DOE bill provides change control as an inherent part of the process by allowing only those changes which meet a cost-beneficial test. This legislation would go a long way toward improving the current licensing situation while maintaining the current objectives of the nuclear licensing and regulatory process; i.e., assurances to applicants that the plants they propose, once approved, can be constructed and operated as planned, within a regime that affords justifiable certainty; stability and assurance to the public that such action will be undertaken with due regard to protecting public health and safety. This legislation will result in significant time and money savings for any new nuclear facility. The results of a recent study by Los Alamos National Laboratories indicate that this reform package could reduce licensing time on the average from 12.7 to 7.5 years and provide capital cost reductions from $1,342/kW to $964/kW in 1981 dollars.

Implicit in my testimony at the June 14 hearing, is the belief that Stone & Webster Engineering Corporation is firmly convinced that our nation must maintain the nuclear option in its energy mix. To make this option practical, we believe stabilization and improvement of the licensing process through legislation is necessary. A single-stage licensing process can provide a reasonably predictable environment for projecting costs and schedules.

I am pleased to have this opportunity to provide you with further information on these issues relating to the licensing reform measures.

W. J. L. Kennedy

W. J. L. Kennedy
Senior Vice President

Enclosures

cc: Senator Alan K. Simpson
G. G. Fain
J. Curtiss ✓

RCA:EN

ATTACHMENT 1

ANSWERS TO ADDITIONAL QUESTIONS SUBMITTED BY SENATOR MITCHELL

Question 1

One of the most serious complaints against the NRC licensing procedures concerns the backfitting regulations. I would like to know specifically which backfitting orders over the past 10 years you think were inappropriate, why you believe they were, what alternative safety procedure could have been taken and how much the inappropriate backfitting requirements cost?

Answer

The NRC requirement to perform pipe rupture analysis and provide protection from their consequences is one example of a backfit requirement I feel was inappropriately imposed on the industry.

The genesis of "pipe rupture" as an engineering problem was the postulation of a full, double-ended break of the primary coolant system as a basis for the design of containment structures to some definable pressure and temperature condition. Actual, catastrophic failure of high energy piping was not considered a safety issue until 1972. At that time, guidelines requiring the consideration of the physical effects evolving from pipe ruptures were imposed, even for plants at advanced stages of design/construction.

Enormous effort was required in pipe engineering, fabrication, and operational aspects to ensure against pipe failure. The industry was asked to further presume such a failure was real and expend additional significant efforts to protect against the physical effects of the presumed failure. The effect on engineering, licensing, and physical plant reached far beyond the initial problem of a ruptured pipe. Primary systems and their supports were designed for internal pressure and external effects. Piping was restrained from "whipping" or excessive displacement with significant structural additions. Effects of the "jets" from each postulated break impinging on equipment were evaluated and additional protective structures were provided. The price for all of this was easily tens of millions of dollars for some plants.

Numerous arguments regarding these criteria were raised with NRC. Above the important technical issues was the issue of separate safety concerns competing with one another. Structural supports of certain pipes prohibited the removal of insulation and made normal operation and inspection more complicated.

Recently the Atomic Industrial Forum's Committee on Reactor Licensing and Safety met with NRC staff to discuss a suggested pipe break criterion to replace the current criterion. This proposed criterion would still retain certain NRC requirements, but recommends a more rational, engineering basis. Much of the excess noted above would be eliminated and the remaining protection would be premised on a far more realistic basis.

Question 2

One of the reasons why so many changes are ordered now is that construction permits are allowed with only 25% of the plans available to the NRC. For "one-step licensing," 90% of the plans would have to be available. Would the companies be willing and able to provide these fuller plans? Why do companies not provide more information now at the construction phase? If design plans could be settled now so that they could not be raised again at the operating license phase, would companies be willing to submit plans which are 80-90% complete under current procedures?

Answer

I would first like to address aspects of your two statements, that a reason for many changes is that construction permits are allowed with only 25% of the plans available to the NRC; and that 90% of the plans would have to be available for "one step licensing." Your use of the word "plans" is too general and could be misleading. The kinds of plans, as I stated in my testimony before the subcommittee, are determined by "the extent and level of design information necessary for the NRC to determine that a plant can and will be designed and constructed and operated in conformity with the provisions of the Atomic Energy Act and the NRC's rules and regulations." These "plans" ordinarily include such items as design criteria, standard specification and design methods, general plant arrangements, machine location drawings, process and instrumentation drawings and elementary electric diagrams, system descriptions and methodology for testing equipment. However, these "plans" represent only a relatively small portion of the total number of documents needed to construct the plant. Thousands of drawings provide specific design and construction details, which are not necessary for an understanding of plant safety, but rather provide details on bending reinforcing steel, assembling and installing piping and cable supports, placing concrete, and the like. The NRC does not and need not perform a detailed review of these documents. Full "plans" cannot be developed until all equipment is purchased. This is both unnecessary and undesirable before the construction permit is issued. Thus, I consider it inappropriate and misleading to describe the level of detail necessary for NRC's safety determination in terms of the percentage of "plans", be it for the current two-stage or the proposed single-stage licensing review process.

I further disagree that 90% of the design documents, by anyone's count, is required to support a single-stage licensing process. I believe that companies would be willing and able to provide a more detailed level of design information if a single-stage licensing process were adopted through legislation. Such a level of detail would provide all the design information the NRC needs to conduct its safety evaluation. In fact, an effort is now under way to specifically determine this level of detailed design. The Atomic Industrial Forum's Subcommittee on Standardization has been engaged in an effort to develop the appropriate level of design information for a single-stage license application. The primary product of this effort will be a proposed revision to Regulatory Guide 1.70 (Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants), which will describe the information needed to obtain a single-stage license. In addition, actual sample sections of a single-stage safety analysis report have been prepared to illustrate the type and level of design detail the industry proposes to provide in such a safety analysis report. Discussions are scheduled with NRC on this matter.

You also asked why companies do not provide more information now at the construction permit stage. Under the existing two-stage licensing review process, it would be fruitless for an applicant to submit the more detailed design information at the construction permit stage. Such detailed information would only be reviewed again by NRC at the operating license stage unless changes are imposed on NRC to invoke a single-stage review process. As mentioned in my accompanying cover letter, the specter of NRC-invoked backfits, many resulting from changes in regulation occurring between the time of construction permit and operating license, could render earlier detailed plant design and engineering efforts worthless and require costly and lengthy rework. However, if effective backfit management, standardization, and single-stage licensing processes were in effect, the utilities would be afforded the assurance to justify an early commitment to provide more design information. Your help in attaining legislation to provide this required assurance is necessary.

Question 3

A number of plants have been completed in only 7 or 8 years from construction permit approval. How is it that plants like St. Lucie's in Florida have made it through the NRC regulatory process in their manner when other plants have had such difficulty?

Answer

It is true that several plants have been constructed in 7 or 8 years, or even less, from receipt of a construction permit. As you noted, the two St. Lucie plant units are illustrative of these shorter construction times. Why some plants take longer to build is a complex question. Numerous factors come into play, some outside the NRC review process, such as a utility's ability to raise capital and reduction of predicted load growth. However, some trends are recognized with respect to the licensing review process. Plants which came on-line in the 1960s generally had shorter construction periods than those of the 1970s. Two of the reasons are the increasing complexity and depth of the NRC safety reviews which must be completed, prior to start of construction, and prior to fuel load, and the frequency and length of contested hearings. NRC staff has significantly increased the depth of its reviews; witness the increase in staff resources, the level of required design information (early safety analysis reports were contained in 2-4 volumes, whereas now the average report requires 20 volumes), the number of safety questions asked, and the length of staff's safety evaluation report. The lengthening of Atomic Safety and Licensing Board hearings contributes to the delays as discussed in the accompanying cover letter. It was not uncommon for a 2-to-3 day hearing for the earlier plants. It is not uncommon today for hearings to encompass scores of hearing days stretching out over several months and sometimes more than a year. The St. Lucie experience had a lot going for it. The units are almost identical twins. Much of the first unit was completed before construction started on the second. Continuity of an experienced engineering and labor force was maintained by shifting almost 80% of the skilled laborers and 50% of the non-manual laborers from the Unit 1 to the Unit 2 construction effort. Another significant point is that St. Lucie Unit 2 was not a heavily contested case. This is significant since the prospect of NRC having to defend each and every determination it makes in a public licensing hearing increases the complexity and length of its review process. This increase is not due to a better quality review by NRC, but merely to the obtaining of supporting documentation "for the record." The reforms proposed in the pending legislation would help to assure that future plants could be completed in a 6 to 8 year time span, particularly the provisions related to standardized plant approvals and the single-stage licensing process.

Question 4

Given that emergency planning, management ability, and operator training cannot be examined until near the completion of a plant, does it make sense to approve a final operating license before construction? How will public confidence in the system be affected if no hearing is held on these matters before operating begins?

Answer

I do not accept the premise that emergency planning, management ability, and operator training cannot be examined until near the completion of a plant. On the contrary, emergency planning, management ability and operator training can and should be considered and judged by NRC at the initial application stage.

Starting with emergency planning, much is now known about the regulations and requirements and how to meet them. Dozens of emergency response plans have been submitted and reviewed by NRC. In addition, several emergency response exercises have been successfully conducted under the watchful eyes of NRC and the Federal Emergency Management Agency (FEMA). With this experience has come a better understanding by the regulators and the utilities of what is required and what works well. Plans submitted as part of a single-stage licensing process would address and commit to the governing criteria. The current off-site emergency planning requirements were promulgated less than 4 years ago, thus these matters have been necessarily addressed at the operating license stage. However, as any other new requirement, emergency planning should be addressed as part of the initial application. Actual tests of the plan are not necessary until some time later. However, the purpose of those tests is to provide training and help to identify where improvements might be made, not to establish the adequacy of the plan. NRC and FEMA already have sufficient authority to deal with this situation, as evidenced by the recent Indian Point proceeding. The details of plant design have no effect on evacuation plans.

The question of management ability is important and its consideration should not be delayed "until near the completion of a plant." Management ability should be evaluated before the first hole is dug. NRC can certainly review the management structure and systems and personnel qualifications before granting any license. It is just as important for the NRC to judge the utility's ability to manage the design and construction of a multi-billion-dollar project as it is to judge its ability to safely operate the completed plant. It is only rational and in the public's best interest, in terms of both safety and economics, that the utility's capabilities in these areas be weighed prior to spending billions of dollars. The NRC need not wait for the final installation of pipe supports and electrical wiring to determine the acceptability of a utility's management abilities. NRC continually monitors construction progress through its inspection and enforcement division and with the proposed single-stage process, it would maintain the authority to take necessary action to correct problems encountered during construction.

Operator training is another example of an issue not directly related to the design and construction of the physical plant that is more appropriate to consider years before completion of a plant. The methods and procedures that lead to good operator training are well established. The licensee should consider and commit to such a training program before the first yard of concrete is placed. Successful operator training programs start years before actual operation. It is important to note that operators are individually reviewed and licensed by NRC and are not included in a plant operating license. The work now being done by INPO will be particularly effective in ensuring adequate training and qualification.

The single-stage licensing process would demand that the above issues be considered up front, would require an earlier and more complete commitment from the utility and its contractors, and would require NRC to perform a move comprehensive review earlier. These efforts would result in earlier resolution of licensing issues.

Discussion of the three issues posed by you illustrates that the single-stage licensing process would enhance public input by providing an earlier more comprehensive examination of all issues.

Your corollary question asks if public confidence will be affected if no hearing is held on these matters before operation begins. I believe public confidence will be enhanced with adoption of the single-stage process because issues like emergency planning, management ability, and operator training will be dealt with, not at a hearing held after billions of dollars have been spent, but much earlier before the financial burden has been established.

Question 5

Many improvements in NRC procedures can be accomplished without legislation. What improvements do you see can be done without legislation? What are the priority areas which require legislation?

Answer

I would like to start out by reiterating my testimony before the subcommittee:

> While it is certainly arguable, as a legal matter, that a number of the proposed changes could be accomplished by administrative action, I submit that since they would be departures from long-standing policy and practice, they would likely encounter considerable resistance and, perhaps, challenge in the courts. I refer, for instance, to employing hybrid hearings. Other aspects clearly require changing the law, such as the single-stage hearing for a Construction and Operating License. Given this situation, we are convinced that making all of the changes by law will ensure maximum certainty in the minimum of time, which is our common goal.

The industry, especially the utility sector, needs a clear and strong statement that the current licensing morass will, in fact, be eliminated. While granting that many of the bills' proposed improvements appear to be administrative in nature, confidence in a revised stable licensing process can best be assured if such improvements are supported by an underpinning founded in law.

Statement On
NUCLEAR POWER PLANT LICENSING

Before the
NUCLEAR REGULATION SUBCOMMITTEE
Environment and Public Works Committee
U.S. SENATE

By
Larry Hobart, Deputy Executive Director
American Public Power Association

June 14, 1983

My name is Larry Hobart. I am Deputy Executive Director of the American Public Power Association. APPA represents 1,750 local public power systems located in 48 states.

APPA members are interested in nuclear power because (a) some of them own and operate nuclear power plants; (b) a number are joint owners of nuclear power plants built and operated or planned by other utilities; (c) others have executed life-of-unit agreements for capacity in nuclear power plants; and (d) many purchase power at wholesale from utilities which use nuclear power plants for part of their generation.

Attached to this statement is a list of public power systems which have ownership or participation sales contract interests in nuclear power plants. Total nuclear generating capacity on line or proposed by local and state agencies in 1982 was in excess of 14.5 million kilowatts; when the on-line and underway plants of the Tennessee Valley Authority (which serves 110 municipal electric utilities) are added, the figure is nearly 25.8 million kilowatts.

APPA supports the purposes of legislation pending before your subcommittee in the form of S. 893, the "Nuclear Power Plant Licensing Reform Act of 1983" drafted by the Nuclear Regulatory Commission, and S. 894, the "Nuclear Licensing and Regulatory Reform Act of 1983", prepared by the Department of Energy. APPA believes that there exists opportunity to improve the NRC licensing process consistent with the public interest in both economic and environmental protections and that there are reasons to take such steps now.

Secretary of Energy Hodel and NRC Chairman Palladino on May 25 laid out a number of reasons for reform which APPA endorses, including the following:

1. While public health and safety in operation of nuclear power plants remains the paramount objective of NRC review, consumers are entitled to a process which secures essential regulatory scrutiny with maximum effectiveness and efficiency so as to avoid unreasonably prolonged procedures which cause unnecessary costs.

2. The decision as to whether or not to use nuclear power in supplying the nation's electrical needs should be made in an open fashion at NRC with a full, fair opportunity for participation by affected parties, but the substance of issues and not the process should be the deciding factor.

3. It is in the public interest to refine the ground rules for the debate at NRC to insure that:

- Basic decisions are made early before major allocations of time and talent are made, before large sums of money are committed, and before a possibly controversial answer is literally cast in concrete.
- Degrees of risk are compared to the price of protection in a reasonable way.
- Non-productive repetitive examination of power plant proposals is avoided.
- Uniformity in approach and finality of result are achieved.
- The primary forum for resolving disputes is the Commission rather than the courts.
- Overall, the pattern of regulation has sufficient predictability that the general public, electricity users, governmental officials, and utilities view it as an equitable, stable, and systematic approach.

S. 893 and S. 894 encompass a series of suggestions which have been discussed -- but not acted upon -- for many years. They include the following:

- Early approval of sites.
- Acceptance of local and state assessments of need-for-power and alternate-energy-source issues.
- Encouragement of standardized reactor designs.
- Collapse of construction permits and operating licenses into a single step.
- Opportunity for legislative-type as well as trial-type hearings where appropriate.
- Establishment of standards for back-fitting.

Implementation of changes of this kind would improve NRC regulation of operating nuclear power plants, those still involved in NRC licensing, and units which will be the subject of future applications.

There is not a national consensus on how much electric generating capacity we will need to meet future demand, or how whatever load growth occurs can most economically be met. However, while the rate of increase has slowed, use of electricity continues to expand. Simultaneously, new concerns are voiced about the environmental impact of fossil fuel combustion. There are a number of nuclear power plants in the pipeline, and additional nuclear facilities may be required, to satisfy both national energy and environmental protection objectives. Changes in licensing approaches are desirable to insure timely availability of these projects and keep their costs down.

The basic impetus for alterations at NRC is not to make the process less rigorous but to make it more useful.

In addition to delay caused by siting and licensing procedures, nuclear power plants have not come on line as originally scheduled because of lower-than-anticipated load growth, financial difficulties, labor problems, equipment delay, and other reasons. But the fact that slowdowns have occurred for different causes is not a reason to abandon efforts to make the regulatory system work better.

The impact of any change today in the handling of license applications is not likely to produce major results for some years. But if changes are to be made, it is necessary to start. The problem has been long postponed as it is.

There are differing views as to how much time can be saved by altering procedures for reviewing applications for licenses for nuclear power plants. Nevertheless, if there are any opportunities to speed up the process or remove obstacles from the critical path while satisfying the objectives of the Atomic Energy Act, we should take advantage of them. The public interest in this matter includes the cost of the time it takes to make a decision.

Some of the proposals for improving the regulatory scheme might be implemented administratively under existing law. Still, it is important that Congress make clear what it thinks should be done and mandate approaches. The Atomic Energy Act is already full of detail telling the Nuclear Regulatory Commission how to run the public business and it is not untoward for you to further prescribe objectives and solutions rather than rely on the initiative of changing commissioners with varying views on the correct answers.

Despite continued debate within and before the NRC about the merits of suggested changes in Commission procedures, definite decisions and clear courses of action have not developed in areas such as backfitting and standardization. Generic approaches to review of recurring issues have not materialized where discretionary Commission authority exists, and a legal basis is lacking for NRC to make other changes.

These facts represent reasons for moving toward legislative solutions.

Opposition to alteration of the Atomic Energy Act to remove uncertainties in the licensing of nuclear power plants on the part of some may spring from opposition to nuclear power. Yet national policy as enunciated by the Congress and the Administration supports nuclear power. The public must be properly protected, but that protection encompasses timely availability of an energy source which Federal policy has earmarked as essential.

What are the consequences of shortening the time it takes to bring a nuclear power plant on line?

Faced with large capital investments and long leadtimes, utilities would be encouraged to utilize nuclear power if they thought that their exposure prior to power production could be reduced to less than a decade.

Decreased uncertainty and increased confidence about nuclear power would reduce pressure on development of coal resources, and permit a further fallback from reliance on oil and natural gas for power production.

Costs of building plants would be reduced.

Economic benefits would flow to consumers of those regions which now would otherwise rely on more costly sources of electricity.

Industry-wide use of standardized nuclear steam supply systems by itself could provide significant advantages:

- Regulatory review time eliminated because of repeated use of the same basic design means that "need for power" forecasts could be more accurate because they need not look so far ahead.
- More engineering could be completed prior to the time for start of construction and this would reduce the total time required to build the plant.
- Early identification of the licensing criteria which must be satisfied by the design could result in minimal design changes during construction.
- Orders for equipment could be placed earlier helping to beat inflation and defeat late deliveries.
- With a reduction in "customizing" of reactors, design, engineering, and vendor resources could be employed more efficiently.

- Utilities could train on each other's reactors and usefully exchange construction and operating experience.

- Utilities could share large spare parts rather than having each plant or each utility purchase and store the same item for possible future use.

- Down-time of nuclear plants might be decreased.

APPA is a member of the American Nuclear Energy Council and has followed the formulation of ANEC's views on the pending legislation. The thrust of ANEC comments presented here today parallel much of the thinking of APPA members. I would like to discuss three pointsof special interest to APPA.

1. In the case of publicly owned electric utilities, which are governed by a city council or an elected or appointed board of public officials, a determination on "need for power" and the source to satisfy it are made by those having responsibility for setting the policies of the system. In some situations, affirmation of that decision by a political subdivision of the state may be required by a state agency with responsibility for approval of siting of bulk power supply facilities. Attached to this statement are tables contained in the "1981 Annual Report on Utility and Carrier Regulation" published by the National Association of Regulatory Utility Commissioners which depict state jurisdiction over this and related questions.

Both the NRC and DOE proposed legislation would, under certain circumstances, make these decisions at the local and state level binding on the Commission.

Many proposed nuclear power plants are planned to meet the needs of consumers in more than one State. Frequently, such facilities are part of a regional power supply program involving interstate movement of power on a coordinated basis. The reasons for these kinds of arrangements include these facts:

- There are economies of scale in building nuclear power plants and an individual utility may be unable to maximize the potential savings because its load is not large enough.

- Because of geographic proximity, corporate ties, or power pool patterns, it may be most logical to share plant output with a utility or utilities in another state rather than put together an agreement with power systems in the same state.
- All states do not have the same availability of land and water required for a nuclear power plant, and it may be mandatory to build the facility in one state and transmit the power to another state which seeks to use this source of energy.

There is no present requirement that regional planning by utilities be taken into account in local and state decisions on the need for power. A single state can veto construction of a particular nuclear station on grounds that there is not a need for power within the state even though output of the plant would be fully absorbed on a regional basis. The result of such a veto could be to deny use of nuclear power not only in the state where approval is sought, but throughout the region involved.

In consideration of nuclear regulatory reform legislation introduced during the Carter Administration, APPA recommends that when a nuclear power plant is a regional project in that it would serve the needs of more than one state, then NRC should have authority to make the necessary evaluation and determination of the need for such facility in consultation with the affected states.

2. The two bills pending before the subcommittee would allow "any person or entity" to secure a nuclear power plant site permit good for a period of 10 years and, under the DOE proposal, renewable indefinitely.

There are a limited number of new sites for nuclear power plants. This is true because of the requirements for such sites. For instance, large amounts of land are required plus access to significant volumes of cooling water. They must be served by major transportation facilities for movement of massive components. Low population density is demanded. Geologic stability is needed. There must be adequate opportunity for heat dissipation, transmission access, and acceptable community impact. And the whole location must result in an economic and technically feasible plant, and pass the regulatory scrutiny of NRC and affected states.

Not every locale is suitable for a nuclear power plant, and even some states and regions may be hard-pressed to find future sites which meet the requirements. Where the sites do exist, industrial organizations also seek to use them.

Because sites are a scarce commodity with a potential high value, there could be attempts to monopolize or control them in restraint of trade. This is a fact of particular importance because sites for nuclear power plants (or other kinds of generating facilities which might be built there) will be employed to produce an essential public service -- electricity.

There exists the possibility of multiple applicants for a single site, and a need to consider what requirements and restrictions should be placed on a successful applicant in order to insure that others with an interest in nuclear power are treated fairly in competitive terms. It is theoretically possible under the terms of the two bills that a single entity -- such as a big electric utility holding company -- whose application was first in time, might corner the market on sites, hang onto those rights, and bargain them away over a 20-year period or establish monopoly power over an important energy-related resource. While this occurrence may be considered unlikely, what is quite plausible is the creation of regional site fiefdoms in the hands of a small group composed of the larger utilities. The reason that this scenario seems realistic is that it echoes past patterns of conduct where similar consortia conspired to control access to nuclear generation to the detriment of smaller systems.

That problem was solved, in part, by application of the anticipatory antitrust review provisions of Section 105(c) of the Atomic Energy Act. The DOE bill would provide the same protection in connection with early site approval by including a site permit as a subject of review. APPA strongly supports this provision and continuation of the existing statutory and administrative procedure for dealing with these matters, the pattern for which is well developed and accepted.

It should be recognized that language of the NRC and DOE proposals does not preclude the possibility of private non-utility interests or non-Federal general government organizations securing site permits. This might be done as a matter of speculation on the part of private parties who hope to sell rights to a utility or as a matter of public policy by states which wish to "bank" sites for land use planning and control of nuclear power plant locations within their jurisdiction.

3. Retrofitting of nuclear power plants in operation or under construction is a cause of concern for public power systems with such plants. No argument can be made that public health and safety should not be properly protected because that is a primary purpose of NRC regulatory review. But just as no activity is "riskless", none is "priceless". It is sensible to weigh the degree of danger against the cost of avoiding, averting, or ameliorating it. Clearly these are not easy judgments. However, reaching them is aided by defining the problem, establishing a standard, and specifying factors to be included in the evaluation. These things are called for in the legislation framed by the Department of Energy.

To illustrate the cost impact of backfitting, I have attached to this statement a copy of information on backfitting provided NRC by the Sacramento Municipal Utility District earlier this year. As you will note, the cost of SMUD's 918,000 kilowatt nuclear plant which went on line in 1975 was $335 million. Since the initiation of commercial operation, SMUD has spent an additional $129.9 million for backfitting. These costs are allocated as $60.9 million for handling changes related to the Three Mile Island accident, $39.8 million for NRC-imposed backfitting other than TMI-related, and $28.4 million of utility initiated backfitting. An additional backfitting cost of $99.8 million is anticipated for Rancho Seco, of which $54.4 million is TMI-related, $12 million is for other NRC imposed costs, and $33.4 million is for utility-initiated projects.

The figures show that the capital cost of SMUD's Rancho Seco nuclear power plant will likely be increased by 50% because of NRC required backfitting, exclusive of changes planned independently by the utility. The additional costs must be absorbed into rates which SMUD charges its consumers.

ATTACHMENT 1

PUBLICLY OWNED ELECTRIC UTILITY SYSTEMS' NUCLEAR POWER PLANT OWNERSHIP

Revised 3/6/82

PUBLICLY OWNED UTILITY SYSTEM	PLANT	STATUS* (Commercial operation date)	CAPACITY (MW)	PUBLIC SYSTEM'S SHARE OF PLANT %SHARE	MW SHARE
Alachua, Fla.	Crystal River #3	CO (1977)	825	.0779	.64
Anaheim, Calif.	San Onofre #2 & 3	CP (1982 & 1983)	2,200	3.16	69.52
Austin, Texas	South Texas #1 & 2	CP (1984 & 1986)	2,500	16.0	400.0
Burlington, Vt.	Pilgrim #2[3] Millstone #3	CP (1986)	1,156	.3650	4.22
Bushnell, Fla.	Crystal River #3	CO (1977)	825	.0388	.32
Chicopee, Mass.	Millstone #3	CP (1986)	1,150	1.35	15.61
Dalton, Georgia	Vogtle #1 & 2 Hatch #1 & 2	CP (1984 & 1987) CO (1975 & 1978)	2,226 1,581	1.60 2.20	35.62 34.78
Eugene, Oregon	Trojan	CO (1976)	1,130	30.0	339.0
Gainesville, Fla.	Crystal River #3	CO (1977)	825	1.407	11.61
Hudson, Mass.	Pilgrim #2[3] Seabrook #1 & 2	CP (1984 & 1986)	2,300	.07956	1.83
Kissimmee, Fla.	Crystal River #3	CO (1977)	825	.6754	5.57
Leesburg, Fla.	Crystal River #3	CO (1977)	825	.8244	6.80
Nebraska Pub. Pwr. Dis. Lincoln, Nebraska[1]	Cooper	CO (1974)	778	50.0 12.5	389.0 97.0
Los Angeles, Calif.[2]	Palo Verde #1-3	CP (1983, 1985, 1987)	3,810	5.7	217.17

[1] participation sales contract only; no plant ownership

[2] will become effective 1983

[3] cancelled

PUBLICLY OWNED UTILITY SYSTEM	PLANT	STATUS* (Commercial operation date)	CAPACITY (MW)	PUBLIC SYSTEM'S SHARE OF PLANT %SHARE	MW SHARE
Lyndonville, Vt.	Millstone #3	CP (1986)	1,150	.000487	.560
Massachusetts Mun. Wholesale Electric Company	Pilgrim #2^3				
	Seabrook #1 & 2	CP (1984 & 1986)	2,300	11.59	266.8
	New England #1 & 2^3				
	Millstone #3	CP (1986)	1,150	4.8^4	55.0
	Montague #1 & 2^3				
Mun. Electric Authority of Georgia	Vogtle #1 & 2 Hatch #1 & 2	CP (1985 & 1987) CO (1975 & 1978)	2,300 1,542	17.7 17.7	408.0 269.0
New Smyrna Beach, Fla.	Crystal River #3	CO (1977)	825	.5608	4.63
N. Carolina Mun. Power Agency #1	Catawba #2	CP (1985)	1,145	75.0	857.75
Ocala, Fla.	Crystal River #3	CO (1977)	825	1.3333	11.0
Omaha Public Power District	Ft. Calhoun	CO (1973)	459	100.0	459.0
Orlando, Fla.	Crystal River #3	CO (1977)	825	1.6015	13.21
Orlando Utilities Comm. Florida Mun. Pwr. Agy.	St. Lucie #2	CP (1983)	850	6.08951 8.806	48.84 70.6
Power Authority State of N.Y.	Indian Point #3 Fitzpatrick	CO (1976) CO (1975)	965 821	100.0 100.0	965.0 821.0
Riverside, Calif.	San Onofre #2 & 3	CP (1982 & 1983)	2,200	1.79	39.38
Sacramento Mun. Utility Dist.	Rancho Seco #1	CO (1975)	913	100.0	913.0

[3] cancelled

[4] in process of acquiring additional 5.18% interest

PUBLICLY OWNED UTILITY SYSTEM	PLANT	STATUS* (Commercial operation date)	CAPACITY (MW)	PUBLIC SYSTEM'S SHARE OF PLANT %SHARE	MW SHARE
Salt River Project	Palo Verde #1-3	CP (1983, 1985 & 1987)	3,810	23.4	891.54
San Antonio, Texas	South Texas #1 & 2	CP (1984 & 1986)	2,500	28.0	700.0
Sebring, Fla.	Crystal River #3	CO (1977)	825	.4473	3.69
S. Carolina Public Service Authority	Summer	CP (1982)	900	33.3	300.0
Tallahassee, Fla.	Crystal River #3	CO (1977)	825	1.3333	11.0
Taunton, Mass.	New England #1 & 2³				
	Pilgrim #2³				
	Seabrook #1 & 2	CP (1983 & 1985)	2,400	.10	2.40
Washington Public Power Supply	N-Reactor (Hanford Generating Project)	CO (1966)	850	50.0	425.0
	WPPSS #1	CP (1985)	1,218	100.0	1,218.0
	WPPSS #2	CP (1983)	1,100	100.0	1,100.0
	WPPSS #3³	CP (1986)	1,242	70.0	869.4
	WPPSS #4³	CP (1986)	1,218	100.0	1,218.0
	WPPSS #5³	CP (1987)	1,242	90.0	1,117.8
TOTAL LOCAL AND STATE PUBLIC POWER SYSTEMS:			59,356		14,588.29
Tennessee Valley Authority	Browns Ferry #1-3	CO (1973, 75, 77)	3,456	100.0	3,456
	Sequoyah #1 & 2	CO (1981 & 1982)	2,442	100.0	2,442
	Watts Bar #1 & 2	CP (1984 & 1985)	2,540	100.0	2,540
	Bellefonte #1 & 2	CP (1984-1987) CP (1985-1988)	2,664	100.0	2,664
TOTAL FEDERAL PUBLIC POWER SYSTEMS:			11,102		11,102
TOTAL LOCAL, STATE AND FEDERAL PUBLIC POWER SYSTEMS:			70,458		25,790.29

³ cancelled

* Status: CP - construction permit; CO - in commercial operation

ATTACHMENT 2

Table 74 - SUMMARY OF STATE STATUTES RELATED TO POWER PLANT SITING AND ENVIRONMENTAL PROTECTION

State	Power Plant Siting Law	One-Stop Process	Need Determination 1/	Environmental Review
Alabama	No		No	No
Alaska	No	5/	No	No
Arizona	Yes	Yes	Yes	Yes
Arkansas	Yes	No	Yes	No
California	Yes	Yes	Yes	Yes
Colorado	No	No	Yes	No
Connecticut	Yes	Yes	Yes	Yes
Delaware	No	-	Yes	Partial
Florida	Yes	Yes	Yes	No
Georgia	No 2/	-	No	Partial
Hawaii	No	-	Yes	Yes
Idaho	No	-	Yes	No
Illinois	3/	-	Yes	No
Indiana	No	-	No	Yes
Iowa	Yes	Yes	Yes	Yes
Kansas	Yes	Yes	Yes	No
Kentucky	Yes	No	Yes	Yes
Louisiana	No	-	No	No
Maine	No	-	Yes	No
Maryland	Yes	Yes	Yes	Yes
Massachusetts	Yes	Yes	Yes	Yes
Michigan	No	-	No	No
Minnesota	Yes	Yes	Yes	Yes
Mississippi	No	-	Yes	No
Missouri	No	-	Yes	No
Montana	Yes	No	Yes	Yes
Nebraska	No	-	Yes	Partial
Nevada	Yes	Yes	Yes	Partial
New Hampshire	Yes	Yes	Yes	No
New Jersey	No 2/	-	No6/	Yes
New Mexico	Yes	Yes	No	No
New York	Yes	Yes	Yes	Yes
North Carolina	No	-	Yes	Yes
North Dakota	Yes	No	Yes7/	Yes
Nova Scotia 4/	No	-	No	Yes
Ohio	Yes	Yes	Yes	Yes
Oklahoma	No	-	No	No
Oregon	Yes	Yes	Yes	Yes
Pennsylvania	No 2/	-	No 2/	No
Rhode Island	No	-	No	No
South Carolina	Yes	Yes	Yes	No
South Dakota	Yes	Yes	No	Yes
Tennessee	No	-	No	No
Texas	No	-	Yes	Yes
Utah	No	-	No	No
Vermont	Yes	Yes	Yes	Yes
Virginia	Yes	No	Yes	Yes
Washington	Yes	Yes	Yes	Yes
West Virginia	No	-	Yes	No
Wisconsin	Yes	No	Yes	Yes
Wyoming	Yes	Yes	Yes	No

1/ Several states include the determination of need in a certificate of public convenience and necessity.
2/ States with pending legislation for power plant siting.
3/ Public Utilities Commission has review authority. State has no siting legislation.
4/ The Board has jurisdiction over construction and equipment cost approvals, but all engineering and environmental considerations are under jurisdiction of the Department of the Environment.
5/ Alaska Permit Information Center.
6/ Regulations pending.
7/ If otherwise subject to economic regulation.

Table 75 - SITING BULK POWER SUPPLY FACILITIES

AGENCY	Electric Generating Equipment & Facilities						Electric Transmission Lines						Certification is:	
	Certificate:						Certificate:							
	Construction	Operation	Maintenance	Investor Owned	Public Owned	Co-op Owned	Construction	Operation	Maintenance	Investor Owned	Public Owned	Co-op Owned	Contingent on other Agency Approval	Mandatory
FERC	Yes57/	Yes	Yes	Yes	Yes	Yes	Yes57/	Yes	Yes	Yes	Yes	Yes	No	Yes
ALABAMA PSC	Yes	No	No	Yes	No	No		No	No	Yes	No	No	No	Yes
ALASKA PUC	No	No	No	No	No	No	No	No	No	No	No	No		
ALBERTA PUB 1/														
ARIZONA CC	No	No	No	No	No	No	No	No	No	No	No	No		
ARKANSAS PSC	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
CALIFORNIA PUC	Yes3/	Yes	Yes	Yes	No	Yes	Yes3/	Yes	Yes	Yes	No	Yes	3/	Yes
COLORADO PUC	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
CONNECTICUT DPUC	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes5/	Yes
DELAWARE PSC	Yes	Yes	Yes	Yes	No	Yes	Yes	No	No	Yes	No	Yes	No	No
D. C. PSC														
FLORIDA PSC	No9/	No	No	No	No	No	No9/	No	No	No	No	No		
GEORGIA PSC	No	No	No	No	No	No	No	No	No	No	No	No		
HAWAII PUC														
IDAHO PUC	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes
ILLINOIS CC	Yes	Yes	Yes	Yes	No	11/	Yes	Yes	Yes	Yes	No	11/	No 12/	Yes
INDIANA PSC	No	No	No	No	No	No	No	No	No	No	No	No		
IOWA SCC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
KANSAS SCC	Yes	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes	Yes	
KENTUCKY PSC	Yes			Yes		Yes	Yes			Yes		Yes	Yes19/	Yes
LOUISIANA PSC														
MAINE PUC	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
MARYLAND PSC	Yes	66/	66/	Yes	Yes	Yes	Yes	66/	66/	Yes	Yes	Yes	66/	Yes
MASSACHUSETTS 61/														
MICHIGAN PSC	No26/	No	No	No	No	No	No26/	No	No	No	No	No		
MINNESOTA PUC 27/	Yes27/	Yes	No	Yes	Yes	Yes	Yes27/	Yes	Yes	Yes	Yes	Yes	Yes27/	Yes
MISSISSIPPI PSC	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes
MISSOURI PSC	Yes31/	Yes	Yes	Yes	No	No	Yes31/	Yes	Yes	Yes	No	No29/	Yes30/	No31/
MONTANA PSC	No	No	No	No	No	No	No	No	No	No	No	No		
NEBRASKA PSC	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes32/	Yes33/
NEVADA PSC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
NEW HAMPSHIRE PUC	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes35/	No
NEW JERSEY BPU 37/	No	No	No	No	No	No	No	No	No	No	No	No		
NEW MEXICO PSC	Yes38/	Yes	No	Yes	Yes	Yes	Yes38/	Yes	No	Yes	Yes	Yes	Yes	Yes38/
NEW YORK PSC	Yes40/			Yes	Yes	Yes	Yes40/			Yes	Yes	Yes	40/	Yes
NORTH CAROLINA UC	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No	No	Yes
NORTH DAKOTA PSC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NOVA SCOTIA PUB 63/														
OHIO PUC 60/	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	No	Yes
OKLAHOMA CC	No	No	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
OREGON PUC 45/	Yes45/	Yes	Yes	Yes	Yes	Yes	Yes45/	Yes	Yes	Yes	Yes	Yes	Yes46/	Yes
PENNSYLVANIA PUC	No	No	No	No	No	No	Yes	No	No	Yes	No	No	No	No
PUERTO RICO PSC														
QUEBEC HEB	Yes			Yes			Yes			Yes				Yes
RHODE ISLAND PUC	No49/						No49/							
SOUTH CAROLINA PSC	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	No	No	No	Yes
SOUTH DAKOTA PUC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
TENNESSEE PSC	No	No	No	No	No	No	No	No	No	No	No	No	No	No
TEXAS PUC	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes		Yes	No	Yes
UTAH PSC	Yes	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes
VERMONT PSB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
VIRGIN ISLANDS PSC	No	No	No				No	No	No					
VIRGINIA SCC	Yes	Yes	No	Yes	No	Yes	Yes	Yes64/	No	Yes	No	Yes	No	Yes
WASHINGTON UTC	No	No	No	No	No	No	No	No	No	No	No	No		
WEST VIRGINIA PSC	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
WISCONSIN PSC	Yes			Yes	Yes	Yes	Yes			Yes	Yes		Yes	Yes
WYOMING PSC	Yes56/	Yes	Yes	Yes	Yes	Yes	Yes56/	Yes	Yes	Yes	Yes	Yes	No	Yes

Table 75 · SITING BULK POWER SUPPLY FACILITIES (Continued)

AGENCY	Certification Standards				Public Participation							Procedures to Form Regional Certifying Bodies	Procedures to Consider Multi-State Impact	Cert. Grant Right of Eminent Domain
	Description and/or Source	For Impact on Environment	For Envir. Impact of Alternative Sites	For Evaluation of Need	Public Notice	Optional Hearing	Mandatory Hearing	Required Pre-Hearing Consultation	Right of Intervention	Right of Appeal	Other Safeguards			
FERC	37/	Yes	Yes	Yes	Yes	Yes	Yes 38/	No	Yes	Yes	39/	No	No	Yes
ALABAMA PSC		No	No	Yes	Yes	No	Yes	No	Yes	Yes		No	No	Yes
ALASKA PUC		No	No	No	No	No	No	No	No	No	No	No	No	No
ALBERTA PCB 1/														
ARIZONA CC														
ARKANSAS PSC	3/	Yes	Yes	Yes	Yes		Yes	No	Yes	Yes		No	Yes	Yes
CALIFORNIA PUC	4/	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes		No	No	Yes
COLORADO PUC		Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes		No	No	No
CONNECTICUT DPUC	6/	Yes 7/	Yes 7/	Yes 7/	Yes 7/	Yes 7/	Yes 7/	No	Yes 7/	Yes 7/		No	No	Yes
DELAWARE PSC	8/	No	No	Yes	Yes	Yes	No	No	No	Yes		No	No	No
D. C. PSC														
FLORIDA PSC	9/													
GEORGIA PSC														
HAWAII PUC														
IDAHO PUC	10/	No	No	No	Yes	Yes	No	No	Yes	Yes		Yes	No	No
ILLINOIS CC	11/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	14/	No	No	No14/
INDIANA PSC														
IOWA SCC	15/	Yes	Yes	Yes	Yes	Yes	16/	Yes	Yes	Yes	17/	No	No	18/
KANSAS SCC		Yes	No	Yes	Yes		Yes	No	Yes	Yes		No	No	No
KENTUCKY PSC	20/	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
LOUISIANA PSC														
MAINE PUC	21/	No	No	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes22/
MARYLAND PSC	23/	No 24/	No 24/	No 24/	Yes	Yes	Yes	No	Yes	Yes	25/	No	No	Yes
MASSACHUSETTS 61/														
MICHIGAN PSC														
MINNESOTA PSC 27/	27/	Yes	Yes	Yes 27/	Yes	Yes	Yes	No	Yes	Yes		No	Yes	Yes
MISSISSIPPI PSC	28/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
MISSOURI PSC	31/	No	No	No	Yes	Yes	No	No	Yes	Yes		No	No	Yes
MONTANA PSC														
NEBRASKA PSC	33/	No	No	No	Yes	Yes	No	Yes	Yes	Yes		No	No	Yes
NEVADA PSC	34/	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes		No	No	Yes
NEW HAMPSHIRE PUC	36/	Yes 36/	Yes 36/	Yes 36/	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
NEW JERSEY BPU 37/														
NEW MEXICO PSC	38/	No	No	No	Yes	Yes	Yes	No	Yes	Yes	39/	No	No	
NEW YORK PSC	41/	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		No	Yes	62/
NORTH CAROLINA UC	42/	Yes	Yes	Yes	Yes	Yes	No 43/	No	Yes	Yes	65/	No	No	Yes
NORTH DAKOTA PSC	44/	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
NOVA SCOTIA PUB 63/														
OHIO PUC	60/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	No
OKLAHOMA CC		No	No	No	No	No	No	No	Yes	Yes	No	No	No	No
OREGON PUC 45/	47/	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes		No	Yes	48/
PENNSYLVANIA PUC		No	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No	No	Yes
PUERTO RICO PSC														
QUEBEC HEB														
RHODE ISLAND PUC	49/													
SOUTH CAROLINA PSC	50/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		Yes	Yes	Yes
SOUTH DAKOTA PUC		No	No	No	Yes	No	Yes		Yes	Yes		No	No	No
TENNESSEE PSC	51/	No	No	No	No	No	No	No	No	No		No	No	
TEXAS PUC	52/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	
UTAH PSC	28/	No	No	Yes	Yes	No	Yes	No	Yes	Yes		No	No	Yes
VERMONT PSB	53/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
VIRGIN ISLANDS PSC														
VIRGINIA SCC	54/	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes		No	No	Yes
WASHINGTON UTC														
WEST VIRGINIA PSC	55/	No	No	No	Yes	Yes	No	No	Yes	Yes		No	No	Yes
WISCONSIN PSC	54/	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes		No	Yes	
WYOMING PSC	56/	Yes 56/	Yes 56/	Yes	Yes	Yes	No	No	Yes	Yes		No	Yes	Yes

Footnotes - Table 75 - SITING BULK POWER SUPPLY FACILITIES

1/ Siting under jurisdiction of Alberta Energy Resources Conservation Board.

2/ Arkansas Statutes Chapters 73-276, 73-240; agency regulations and judicial decisions.

3/ California Energy Commission also has certification authority over the siting of thermal power plants and associated transmission lines. For such facilities, prior authorization by the Energy Commission is required.

4/ G.O. 131-B, PUC Rule 17.1.

5/ Contingent on prior approval of NRC, when applicable, and State Power Siting Council.

6/ Connecticut PUCA has authority with respect to method and manner of construction following certification by Connecticut Siting Council.

7/ Connecticut Siting Council determines environmental compatibility, public need and ultimate location of plant or transmission facility.

8/ In Paragraph 7, Delaware Public Service Commission Docket No. 829, p. 4, Order No. 1536 (Delmarva Power and Light Company), the Applicant was ordered to enter into no contracts for construction of generating capacity and associated transmission facilities not presently under construction until such contracts have been approved by the Commission. In seeking such approval, the Applicant should be prepared to demonstrate a need for the construction and to present evidence of the capacity of the customers to pay the costs associated with the construction. It was the intention of the Commission that such application not be made until the annual system peak of Applicant for 1976 had been experienced and analyzed. The applicant was directed to report to the Commission within thirty (30) days as to the changes in method of computation of anticipated demand proposed by the Applicant. This paragraph was based on the authority vested in the Commission by 26 Del. C. §§201, 215 and 302.

9/ Certifying authority resides with the Cabinet pursuant to the Florida Electric Power Plant Site Act. The Commission provides statements as to the necessity for the plant based on either kilowatt demand and/or economics resulting from improved efficiencies.

10/ Idaho Code Section 61-528: financial ability, good faith of applicant, need for additional service, public convenience and necessity. In addition, Commission would consider environmental questions under its residual jurisdiction.

11/ Co-ops must get an order from the Commission for the right to exercise eminent domain.

12/ No other state agencies.

13/ Section 55 of the Illinois Public Utilities Act; Illinois CC General Orders 154 and 160; judicial decisions.

14/ Individual landowners are notified by mail. Staff inspects site.

15/ Conformance to Iowa Law: Section 489.2 (necessary to serve a public use, fits into a program of comprehensive utility planning, meets land use and zoning ordinances); Section 489.18 (routing requirements); Section 489.20 (clearance from buildings); and Sections 489.25 and .26 (clearance over railroads). In addition, require conformance to Iowa Electrical Safety Code. Agency regulations and judicial decisions also provide guidelines.

16/ Mandatory hearing if written objection is filed after notice.

17/ On projects involving over one mile of line over 34.5 kV, there must be an "Informational Meeting" held in each county. A commission representative reads a summary of legal rights and utility representatives answer questions about the line. Utility may not negotiate easements prior to this meeting.

18/ Request for eminent domain is in addition to the one for certification, but both are heard at the same hearing.

19/ Contingent on prior recommendation of Department of Natural Resources, another State agency, on environmental compatibility.

20/ Demand and need; feasibility; environmental compatibility. Standards are in statutes, agency regulations; and judicial decisions.

21/ The facility must be justified in terms of need. PUC Rule, Chap. 33.

22/ Applies to transmission lines of 5000 volts or more.

23/ Article 78 of the Annotated Code of Maryland, Sections 54A and 54B; Commission regulations.

24/ Commission regulations, however, propound extensive information requests and studies.

25/ By law, a local governing body has the opportunity to participate during the hearings with the Commission but not in the decision-making process. Commission must consider recommendations of such local governing body and of other State agencies including Department of Natural Resources, Department of Health and Mental Hygiene, Department of Transportation, Department of Economic and Community Development, and Department of State Planning. In addition, applicants are required to notify affected property owners of a proposed high voltage transmission line at least 30 days prior to a hearing.

26/ The only circumstance under which the Michigan Commission might be considered to have certification authority is where the utility proposes to initiate operations in a municipality where another utility or agency is already engaged in rendering the same sort of service.

27/ The Minnesota Environmental Quality Board (MEQB) certifies the site of large (50,000 Kw or more) generating plants and issues construction permits for high voltage (200 Kv. or more) transmission lines (Minn. Stat., Sec. 116C.51-69). Various state agencies issue water appropriation, NPDES, etc. permits. Siting and routing criteria are contained in Minn. Reg. MEQC 71-75. Before the siting or routing process can be completed, the Minnesota Energy Agency must issue a Certificate of Need.

28/ The Public Service Commission grants certificates of public convenience and necessity for construction of all bulk power plant facilities and transmission lines. The Commission holds public hearings to determine the need, feasibility, and environmental impact of bulk power plants and transmission lines. Agency regulations prescribe criteria.

29/ Commission regulates only safety of co-op owned transmission lines.

30/ Need approval of NRC, when applicable, and State Air and Water Commissions.

31/ Investor-owned systems do not need certification if proposed construction is within their certificated service areas. As far as the operation and maintenance is concerned, no separate "certificate" is necessary, but all of this is included when such construction certificate is issued. In addition, any expenses for operation and maintenance are reviewed to see if proper and reasonable. Standards for issuing certificates are contained in statutes and judicial decisions.

32/ Approval contingent on approval of another State agency. Standards for certification are set forth in State statutes and commission regulations.

33/ Mandatory for publicly-owned systems.

34/ Nevada Revised Statutes, Chapter 704, and Commission regulations.

35/ Prior approval required of State Site Evaluation Committee.

Footnotes - Table 75 - SITING BULK POWER SUPPLY FACILITIES (Continued)

36/ The PUC must find that the proposed facility is required to meet the present and future demand for electric power and will not adversely affect system stability and reliability and economic factors. Environmental criteria are not within jurisdiction of the PUC, but New Hampshire has a Site Evaluation Committee comprised of 13 members who are representatives of key state agencies, including the Chairman of PUC and Chief Engineer of PUC. This Committee holds joint hearings with the full PUC. The Site Committee must find that the proposed project: (1) Will not unduly interfere with the orderly development of the region with due consideration having been given to the views of municipal and regional planning commissions and municipal legislative bodies; and (2) Will not have an unreasonable adverse effect on aesthetics, historic sites, air and water quality, the natural environment, and the public health and safety. These findings are sent to the PUC. The PUC makes its own findings and then issues a decision incorporating all findings and all licenses of other state agencies. This decision is the Certificate of Site and Facility and it is final subject to judicial review.

37/ The New Jersey BPU has not promulgated any rules or regulations requiring prior certification of construction, operation or maintenance of electric generating equipment and transmission lines of electric utilities under its jurisdiction. However, pursuant to the authority under *N.J.S.A.* 48:2-13, the Board has general supervision and regulation of and jurisdiction and control over all public utilities and their property, property rights, equipment, facilities and franchises so far as may be necessary for the purpose of maintaining safe, adequate and proper utility services. Further, in accordance with *N.J.S.A.* 48:2-23, the Board is authorized to require performance and furnishing of such services in a manner that tends to conserve and preserve the quality of the environment and prevent the pollution of the waters, land and air of this State.

In accordance with various statutory and regulatory requirements, the construction, operation and maintenance programs of electric utilities in New Jersey are closely monitored through several aspects such as financing, zoning and planning, power of eminent domain and condemnation proceedings to acquire a right of way or construct electric generating facilities, and safety in general where not preempted by federal regulation.

Under Docket No. 762-194, the Board has commenced an inquiry into the reasonableness of present and planned construction programs of all electric utilities.

38/ Concerning location, generating stations capable of 300,000 kilowatts or more or transmission lines of 230 kilovolts or more must receive commission approval, which shall not be denied if air and water standards (generating) or important environmental standards (transmission) are met. Except for extensions, no public utilities shall begin the construction or operation of any plant or system without first obtaining a certificate from the Commission.

39/ By statute, the Attorney General may intervene on behalf of consumers.

40/ For generating equipment with a capacity of 50,000 Kw. or more; for transmission lines with voltage of 125 Kv. or more for a distance of at least one mile and 100-124 Kv. for a distance of more than 10 miles. The New York Public Service Commission is solely responsible for certifying transmission lines. Certification of generating facilities is done by a Siting Board, in the Department of Public Service, with the PSC Chairman being one of five members on the board and also chairman of the Siting Board. The PSC staff participates fully in both certification proceedings.

41/ The decision must be based upon the record and must find and determine in regard to construction applications: (1) the basis of need for the facility; (2) the nature of the probable environmental impact; (3) that the facility represents the minimum adverse environmental impact considering available technology and economics of alternatives; and (4) that the facility is consistent with long range planning objectives. In regard to operation and maintenance, the New York Public Service Commission has issued orders on required maintenance to assure reliable and adequate capacity.

42/ North Carolina Utilities Commission Rule R8-42 and R8-43 and N.C.G.S. 62-110.1. The Utilities Commission has confined its review and investigations primarily to the following areas: (1) the need for new power generating facilities; (2) economic justification for the type of facility; (3) site specific environmental impact; (4) alternative types of facilities and sites; and (5) safety.

43/ Hearing mandatory if requested by complainant.

44/ PSC Regulation R49-22-10.

45/ Certificates issued by Oregon Energy Facility Siting Council.

46/ By Governor.

47/ Oregon statutes, Chapter 469; Rules and Regulations of Energy Facilities Siting Council.

48/ Varies with facility involved.

49/ The authority of the Rhode Island Public Utilities Commission and Division of Public Utilities in regard to facility siting is derived from its oversight of eminent domain and the issuance of securities. All utilities are required to obtain the agency's permission prior to exercising any power of condemnation or issuing securities. No certificate for construction is required, however, public hearings and commission decisions on construction issues may result from these two authorities.

50/ South Carolina Statutes 58-1801 through 58-1832.

51/ Property dedicated to public use, as set out in statutes and judicial decisions.

52/ The general criteria are set out in the Texas Public Utility Regulatory Act and Substantive Rules. They are: nondiscrimination, adequacy of existing service, need for additional service, effect of the grant on the recipient and other like utilities, and factors such as community values, recreational and park areas, historical and aesthetic values, environmental integrity, cost.

53/ 30 VSA §248.

54/ Construction and operation of the proposed facilities must be for the public convenience and necessity. The location and construction of facilities must minimize adverse environmental impact. Criteria are set out in statutes, regulations and judicial decisions.

55/ Statutes require that the proposed facility must be in the public interest, required by the public convenience and necessity, and not adversely affecting another utility.

56/ The Wyoming PSC has authority over transmission lines only. Authority with respect to plant siting was transferred to a new agency created for this purpose - the Industrial Siting Council. Air Quality and water quality administered by the Department of Environmental Quality; also water quality by the Health Department/U.S. Environmental Protection Agency, and water use by the State engineer.

Concerning transmission lines, the Commission evaluates and rules upon any matters relating to certification, including: jurisdiction; public need and purpose; construction, operation, maintenance and financial feasibility; adequacy of financing; ownership, management and operations arrangements; prospective rate impact; and pricing.

Footnotes - Table 75 - SITING BULK POWER SUPPLY FACILITIES (Continued)

57/ The Commission is empowered to issue licenses pursuant to Sections 4(e) and 15 of the Federal Power Act (FPA). Such licenses apply only to hydroelectric generating facilities constructed by all private and non-Federal public entities.

The Commission's authority with respect to construction and operation is pursuant to Sections 9, 10, 11, and 13 of the Federal Power Act.

Regulations under the Federal Power Act applicable to its authority to license hydroelectric facilities are contained in 18 CFR 4 through 9, 12, and 16.

The Commission's jurisdiction extends to all hydroelectric projects which occupy navigable waters of the United States, affect government lands, use water or water power from a government dam, or affects the interests of interstate commerce. Transmission lines licensed by the Commission must be primary lines as defined in Section 3(11) of the Federal Power Act, i.e., a line connecting the hydroelectric plant with a distribution system or interconnected transmission system.

58/ May be waived at request of applicant.

59/ All applications for license and amendment of license are circulated for comments to all appropriate Federal, State, and local agencies. Any person may also comment on applications. Section 4(e) of the Federal Power Act specifically requires comments from the Department of the Interior, Department of Agriculture and the U.S. Corps of Engineers.

60/ Separate Power Siting Commission.

61/ Separate Power Siting Council.

62/ A certificate issued under Article VII or Article VIII of the Public Service Law cannot grant the right of eminent domain to an applicant. However, an applicant who already possesses this right must obtain a certificate before it may exercise its right of eminent domain.

63/ The Board has jurisdiction over construction and equipment cost approvals, but all engineering and environmental considerations are under jurisdiction of the Department of the Environment.

64/ Certificate required for transmission lines operated at voltage levels of 200 KV and higher.

65/ By statute, Attorney General and Public Staff intervene on behalf of consumers.

66/ May order continuing requirements; also Certificate states all conditions, permits or licenses required by other State agencies or as found necessary during hearing process.

ATTACHMENT 3

SMUD
SACRAMENTO MUNICIPAL UTILITY DISTRICT ☐ 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3

March 16, 1983

JAMES R TOURTELLOTTE
CHAIRMAN REGULATORY REFORM
TASK FORCE
US NUCLEAR REGULATORY COMMISSION
WASHINGTON DC 20555

RANCHO SECO BACKFIT COST INFORMATION

The information contained in this letter is in response to your letter of February 8, 1983 in which you desire to have backfit cost information on our Rancho Seco plant.

The Rancho Seco power station consists of one PWR nuclear unit with a capacity of 913 MWe. Commercial operation of the unit was April 18, 1975. Total cost of the unit was $335 million (excluding substation and transmission line). This is equivalent to $367 per kW.

Backfitting costs through January 31, 1983 have been $129.1 million. These costs can be allocated as $60.9 million for TMI related, $39.8 million for NRC imposed backfitting other than TMI related; and $28.4 million for utility initiated backfitting. An additional backfitting cost of $99.8 million is anticipated for Rancho Seco of which $54.4 million is TMI related, $12.0 million for other NRC imposed cost and $33.4 million for utility initiated projects.

A summary of the actual to date and projected backfitting costs is provided under Attachment A-1.

Item 1 of Attachment A-1 under TMI related costs includes all the work required by NUREG 0737. As a result of NUREG 0737, the District had to add two new 3500 kw standby diesel generators, a diesel generator building, auxiliary building addition, associated electrical equipment, and a new computer system. In addition to NUREG 0737, other NRC imposed regulations such as 10CFR73.55 for security, 10CFR50 appendix R for fire protection, and ANSI/ASME 45.2.9 required that the District add a Records and Training Building.

Of the $79.1 million cost attributed to the buildings, and associated equipment known as "allocated cost", $58.9 million is considered TMI related, $14.1 million to other NRC imposed regulations and $6.1 million to utility initiated expenditures.

Attachment A-1

SUMMARY OF COST OF RANCHO SECO UNIT
SACRAMENTO MUNICIPAL UTILITY DISTRICT

	(000's of dollars)		
TYPE EXPENDITURE	EXPENDITURE TO 01/31/83	PLANNED EXPENDITURE	ESTIMATED TOTAL COST
1. TMI related cost	60,891.3	54,358.8	115,250.1
2. Other NRC imposed cost	39,833.1	12,070.3	51,903.4
Total expenditure complying with NRC regulations	100,724.4	66,429.1	167,153.5
3. Utility Initiated Backfit Cost	28,427.7	33,376.3	61,804.0
GRAND TOTAL BACKFIT COST	129,152.1	99,805.4	228,957.5

TMI RELATED COST
(000's of Dollars)

DESCRIPTION	EXPENDITURE TO 01/31/83	PLANNED EXPENDITURE	ESTIMATED TOTAL COST
Inhouse Engineering	$ 3,325.5	$ 1,604.5	$ 4,930.0
Emergency Preparation	2,279.0	1,500.0	3,779.0
Auxiliary Feedwater System Modif.	1,995.8	2,715.0	4,710.8
Post Accident Sample System	1,619.7	726.4	2,346.1
Inadequate Core Cooling System	541.5	519.9	1,061.4
Reactor Coolant System Vents	819.7	1,203.1	2,022.8
Hydrogen Purge Isolation Valve	393.8	781.1	1,174.9
Radiation Monitors	1,199.7	3,888.8	5,088.5
Technical Support Center	1,757.0	865.1	2,622.1
Electrical Distribution Equipment	5,044.9	2,714.8	7,759.7
Early Warning System	691.8	108.2	800.0
Control Room Modification	733.9	2,766.1	3,500.0
Interim Data Acquisition System	1,925.1	1,416.9	3,342.0
Emergency Offsite Facilities	761.6	738.4	1,500.0
Other TMI related items	7,302.1	4,427.6	11,729.7
Subtotal TMI related	$30,391.1	$25,975.9	$ 56,367.0
Allocated Joint Cost	30,500.2	28,382.9	58,883.1
Total	$60,891.3	$54,358.8	$115,250.1

OTHER NRC IMPOSED COST
(000's of Dollars)

DESCRIPTION	EXPENDITURE TO 01/31/83	PLANNED EXPENDITURE	ESTIMATED TOTAL COST
Security Protection	$15,792.9	$ -	$15,792.9
Fire Protection	8,148.0		8,148.0
79-01B Changes	529.9	4,403.3	4,996.2
High Energy Break Analysis	1,405.6	839.1	2,244.7
FSAR Update	514.0	-	514.0
Other modifications and studies	5,833.7	316.2	6,086.9
Subtotal	$32,224.1	$ 5,558.6	$37,782.7
Allocated Joint Cost	7,609.0	6,511.7	14,120.7
Total Other NRC Imposed Cost	$39,833.1	$12,070.3	$51,903.4

UTILITY INITIATED BACKFIT COST
(000's of Dollars)

DESCRIPTION	EXPENDITURE TO 01/31/83	PLANNED EXPENDITURE	ESTIMATED TOTAL COST
Replace Spent Fuel Racks	$ 2,049.9	$ 4,894.1	$ 6,944.0
Upgrade L.P. Rotors, Moisture Separator Reheaters	4,990.2	12,009.8	17,000.0
Replace Feedwater Heaters	2,975.0	-	2,975.0
Spare Stemp Transformers	1,523.0	-	1,523.0
Interim Onsite Storage Low Level Radwaste	548.9	6,411.5	6,960.4
Misc. Water Evaporator	2,221.1	325.1	2,546.0
Install Air Handling Unit	1,306.1	371.3	1,677.4
Add Offsite Warehouse	592.0	-	592.0
Install 3rd Component Cooling Water	30.6	804.4	835.0
Other District Plant Modifications	11,852.9	2,798.3	14,651.4
Subtotal	$28,089.7	$27,614.5	$55,704.2
Allocated Joint Cost	338.0	5,761.8	6,099.8
Total Utility Initiated Cost	$28,427.7	$33,376.3	$61,804.0

NUCLEAR LICENSING AND REGULATORY REFORM

THURSDAY, JUNE 16, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, D.C.

The subcommittee met at 10:08 a.m., in room SD-406, Dirksen Senate Office Building, Hon. Alan K. Simpson (chairman of the subcommittee) presiding.

Present: Senators Simpson and Mitchell.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Good morning.

We meet to resume our consideration of the subject of nuclear licensing and regulatory reform. We began that series of hearings last month with testimony received from the NRC and the Department of Energy continued with testimony this past Tuesday from numerous witnesses testifying on behalf of the Edison Electric Institute, the American Nuclear Energy Council, the Atomic Industrial Forum, the American Public Power Association, two vendors, Westinghouse and General Electric, and two architect engineers, Bechtel and Stone & Webster.

This morning, I look forward to hearing from the Union of Concerned Scientists, represented by its general counsel, Ellyn Weiss and its legislative counsel, Mike Faden.

In addition, we have four witnesses who appear as or on behalf of intervenors in a variety of Commission licensing provisions.

Jesse L. Riley of the Carolina Environmental Study Group; Robert Backus of the Seacoast Anti-Pollution League; Peggy Buckhorn of Citizens for Equitable Utilities; and Thomas Devine of the Government Accountability Project.

Each of you bring a very special expertise on the licensing issue that I trust will be of benefit to the committee and to the subcommittee as we move forward with our consideration of this issue.

I do want to pay a special note of thanks to those of you who have devoted your time and resources to travel here to testify today. Your efforts are appreciated by me and others of the committee. It gives us the proper balance and the necessary information from all sources. It is very important to me.

I try not just to make pronouncements about that but actually do that. So, Ellyn Weiss, we welcome you back before the subcommittee. Your previous appearances have always stimulated a good deal of thought on my part and have been most provocative.

I look forward to another productive session this morning. I mean that. We will begin with a statement from you limited to 10 minutes, and you will then be followed by statements from each of the panelists, 5 minutes each, and, then, I have a number of questions for each of the panelists.

The last time I referred to you as Mike McFaden. Today I referred to you as Evelyn, not Ellyn. So I promise this will not continue in this ghastly, grotesque fashion.

So, now, to Ellyn Weiss.

STATEMENT OF ELLYN WEISS, GENERAL COUNSEL, UNION OF CONCERNED SCIENTISTS, ACCOMPANIED BY MICHAEL E. FADEN, LEGISLATIVE COUNSEL, UNION OF CONCERNED SCIENTISTS

Ms. WEISS. Thank you very much, Mr. Simpson.

Thank you for the invitation to appear. I noticed yesterday that there are a couple of corrections that need to be made in this testimony. I hope you will allow me to do that in writing after this hearing.

Senator SIMPSON. Without objection.

Ms. WEISS. With remarkable regularity, the nuclear industry importunes each session of Congress for what is euphemistically referred to as "licensing reform." The singular, unchanging characteristic of these proposals is that they always have as their centerpiece explicit or implicit hostility to the rights of the public to participate in and influence the decisions of the NRC.

We have also noted a disturbing trend in these proposals over the years: As the nuclear industry's troubles mount, as safety problems proliferate, as too many plants undergo astonishing quality assurance failures, and as some projects collapse in an economic heap, the industry's mechanisms to limit public participation become more and more Draconian. It certainly appears as if the intent of these proposals is to kill the messenger bearing the bad news; the worse the news becomes, the more urgent his demise.

I have appeared before this committee previously on behalf of the Union of Concerned Scientists to testify on licensing reform. My testimony has generally approached these proposals straightforwardly, conceding that efficiency is a viable goal, critiquing each element of the proposals at hand on their substantive merits, and suggesting less drastic alternatives.

This year, however, I cannot in good conscience accept that licensing reform is an effort worthy of this committee's time and energy.

I think, quite frankly, it is unconscionable that the Congress should be seriously considering this legislation, particularly the DOE bill. The nuclear industry's problems will not be solved by curtailing adjudicatory hearings, restricting cross-examination, eliminating preoperational hearings or placing procedural and cost-benefit restrictions on backfits so onerous as to prevent the correction of serious safety problems.

On the contrary, adoption of these proposals will simply hide many of the problems from public view and make it less likely that they will be addressed until after the next accident or near miss.

How many tines will those who favor public participation have to prove that the purported "delays" in licensing plants are not attributable to hearings to any significant degree? How many times will examples have to be given of important safety issues raised by the public which had been disregarded by NRC and the industry?

We will not here attempt to replay these hoary arguments; your files from the extensive 1977–78 hearings contain more than enough evidence of the value of the licensing process and the real causes of construction delays.

I have attached an article from Energy Daily to my testimony, which finally will put to rest the complaints of those utilities who cannot manage their own projects. Tom Woods, the executive vice president of Arizona Public Service, which is the owner of the Palo Verde units, stated in this article, "NRC and the regulatory side has not been a problem.

"I think it's a lame excuse that many executives used to blame NRC."

At this point in our history, the burden of proof must be on the nuclear industry. How does the industry explain Zimmer, Salem, Diablo Canyon, and south Texas—not to mention TMI–2? This committee should not so quickly forget the findings of NRC's own special inquiry into the TMI–2 accident:

> Insofar as the licensing process is supposed to provide a publicly accessible forum for the resolution of all safety issues relevant to the construction and operation of a nuclear plant, it is a sham.

As both the special inquiry and the Kemeny Commission advised, the Senate should be drafting legislation to enhance public participation. Instead, these bills would wipe out most remaining vestiges of effective citizen participation.

The Senate should investigate some of the hair-raising quality assurance failures at plants around this country to determine how in each case, NRC and the utility had pronounced themselves satisfied with the level of design and construction only to discover, most often through the disclosures of plant workers and/or intervenors, that the quality of work was far from satisfactory. Yet, if DOE's bill is enacted, operating licenses would issue essentially automatically, with no meaningful opportunity for public scrutiny.

In addition, many important safety problens are still unresolved, despite the Kemeny Commission's condemnation of this longtime NRC practice of simply classifying the most serious safety problems as generic and going on to license new plants without resolving them.

It is profoundly ironic that the backfit restrictions contained in the DOE bill would very likely insure that even if the unresolved problems are finally resolved, NRC would not or could not lawfully require the current generation of plants to make the needed safety improvements. In this context, as in so many others, DOE's bill moves in precisely the opposite direction as the Kemeny Commission recommended. The Commission found:

"The old AEC attitude is also evident in reluctance to apply new safety standards to previously licensed plants."

The Kemeny Commission recommended that, unless additional safety improvements would be "clearly outweighted by cost considerations, there should be a presumption in favor of the safety change."

The bills before this committee are a distraction, and a dangerous one. It is the instinct of a dictatorship, when embattled, to attempt to silence the uncomfortable voices of dissent. I am very much afraid that the industry's goals, embodied in the DOE bill, evince the earmarks of this intent.

The Kemeny Commission's central finding was that:

> To prevent nuclear accidents as serious as Three Mile Island, fundamental changes will be necessary in the organization, procedures, and practices, and above all, in the attitudes of the Nuclear Regulatory Commission and, to the extent that the institutions we investigated are typical, of the nuclear industry.
>
> The Commission is convinced that NRC's attitude must be changed to one that says nuclear power is by its very nature potentially dangerous, and, therefore, one must continually question whether the safeguards already in place are sufficient to prevent major accidents.

The DOE bill embodies precisely the mindset and attitude condemned by the Kemeny Commission, and should be summarily rejected.

The NRC bill, while more reflective of the need to retain at least a minimal level of public participation, contains a number of regressive procedural steps and encourages compromises on essential safety protections.

The NRC and Congress should focus on the real problems of the nuclear industry, instead of letting their agenda be set by the scapegoating of those in the industry who cannot recognize or admit their own shortcomings.

Serious consideration of this legislation, either bill, would send the wrong message to the industry and the NRC itself; namely, that boosterism is on the ascendancy, and the post-TMI emphasis on strengthening safety was only a passing fad.

Thank you very much, Mr. Chairman.

Senator SIMPSON. Thank you very much.

Mike, did you wish to be part of the testimony?

Mr. FADEN. No, Mr. Chairman. I can answer questions, but I don't have any testimony.

Senator SIMPSON. Next is Jesse Riley.

STATEMENT OF JESSE L. RILEY, CAROLINA ENVIRONMENTAL STUDY GROUP

Mr. RILEY. Thank you, Mr. Simpson.

Last June the NRC gave notice in the Federal Register that it was considering asking Congress for legislation which would revise nuclear plant licensing procedures. Subsequently the DOE proposed the similar legislation which this committee is considering.

I asked myself why do these agencies seek this legislation? The AEC exercised the authority given it by the Atomic Energy Act to devise rules for licensing. The NRC apparently has the same right.

It employs a rulemaking procedure in which notice is given of a proposed new or revised rule, comment is received, a hearing is held and the new rule adopted.

Why, with the authority and precedent to establish licensing rules does the NRC, the regulator, propose that the Congress enact new rules? Why now does the DOE, the legally authorized promoter, sponsor these rules for congressional enactment?

It is my opinion that the Congress is asked to legislate new "streamlined" rules because the NRC does not want to be held responsible before the courts for the damage the new rules will do to fairness and due process.

If the Congress endorses these promotion-oriented rules, the NRC can represent them as "the will of the people" rather than an inducement to the industry.

As an intervenor who has participated in licensing proceedings before the AEC/NRC since 1971, I, too, have some thoughts about changing the licensing process. They do not go in the direction of the agency proposed legislation.

My experiences as intervention officer for the Carolina Environmental Study Group are probably representative of those of a number of intervenors. CESG's first intervention was in regard to the construction permit for Duke Power Co.'s McGuire plant. We were moved by the concern over the potentially catastrophic consequences of a large accidental release of radioactivity so near the city of Charlotte and the largely ignored problems of the disposition of long-lived radioactive wastes.

Two of our concerns, the lack of strainers on sump pump intakes and the flimsy construction of the ice basket supports, were reflected in plant construction. We were not given the satisfaction of seeing these matters recognized in the board's decision or of being so informed by the AEC staff. Our proposed findings of fact also called attention to the peaking in the rate of growth in electric demand circa 1967 and a subsequent decline.

This extreme rapid growth rate was due to a maximum in the installation of all-electric homes in that period. The decision ignored this correct and well supported finding and endorsed the utility's and the agency's projection of a compounded growth rate of 7 percent or more. This opened the way to overbuilding and the drastic penalties which the public continues to pay.

CESG also challenged the Price-Anderson limitation on accident liability. Our challenge was ignored by the licensing board. This concern was later heard by a district court which declared the Price-Anderson limitation unconstitutional. The decision was reversed by the Supreme Court. The point? The Agency refused to litigate this key question.

In the construction permit proceeding for Duke's Catawba plant in 1974, CESG concentrated its effort on the need for the plant. Our evidence, analysis, and forecast methodology would, I believe, have satisfied an unbiased science court.

The licensing board recognized the signifiance of this issue. It made an analysis and forecast which supported issuance of the construction permit. The attached figure shows the forecasts made by Duke, the board, and CESG. A 1976 revised CESG forecast is also shown, along with all actual subsequent peaks. It may be seen that both CESG forecasts accurately anticipated the actual trend and bracket all peaks since 1976.

The consequences to the public of accepting over forecasts are serious. The 1971 Duke forecast of 1990 peak, which was accepted by AEC staff, was for 37,500 megawatts. Duke's current forecast, and CESG's 1974 forecast, are for one-third of 37,500. Duke, in the early 1970's, planned 13 reactors. Like many other utilities, it spent money on plans for reactors which by now have been canceled.

The magnitude of this problem is indicated by the number of cancellations: 6 by Duke, 78 nationwide. Duke testified that McGuire would be urgently needed by the winter of 1975–76. Even now it is not required. It was, however, put on line in 1982.

The stretchout of construction, as well as inflation, costs the public dearly. The charges were 4½ times those initially projected. It has been the practice of the utility industry to blame interventions and regulation for delays in construction.

This simply is not the case. The rate of construction was slowed to avoid the embarrassment of having plants go on line which were clearly neither used nor useful, the criterion of the State utilities commission. If McGuire unit 1 had been put on line in 1976, it would have boosted reserve capacity to 56 percent.

Duke has indicated that it will ask the ratepayer to cover some of the expenditures of its canceled plants and to pay Duke earnings on these expenditures. These now total more than half a billion dollars.

What has the NRC done in regard to the over forecasts it endorsed and the unnecessary costs to which the public are exposed? The NRC has ruled that need for power is no longer to be considered in licensing proceedings.

The most serious matter in which CESG has been frustrated by an NRC decision is a safety issue. There was a hydrogen explosion at Three Mile Island. An NRC consultant calculated that a pressure of 191 pounds per square inch could develop in a McGuire or Catawba size containment. These containments were designated for a maximum pressure of 15 pounds per square inch. Even with a safety factor of 3 to 4, the containment would burst at half the calculated maximum pressure. CESG reopened the McGuire operating license proceeding on the basis of this concern. The board which authorized reopening however accepted Duke's motion that CESG must prove a serious accident could occur, rejected all the testimony, prefiled an aural that CESG proferred, and excluded from the record the contract work documents which reflected the NRC staff's concerns about hydrogen explosions.

Further, the board decided before the close of the hearing that it would be unnecessary to make a record on previously admitted CESG contentions that the emergency planning for the city of Charlotte was inadequate and crisis relocation plans were nonexistent.

These experiences do not lead me to conclude that we need a further expedited licensing proceeding in which neither siting nor plant design will be considered and in which the opportunity for effective intervention will be even more curtailed.

Under these circumstances, how best can the Congress serve the Nation? By revising the licensing process in the opposite direction.

The NRC has a built-in conflict of interest. If it decides that nuclear generation is unpredictable as to safe operation, consider the Salem incidents of February in which the key safety devices failed to operate on signal, and that the impact of nuclear wastes extends far beyond our temporal capacity to monitor or control, there would be no alternative but to close it down.

That means about 8,000 jobs. And it means uncertainty in regard to the attainment of status and power. I can understand why the AEC/NRC, juggernaut like, rolls on. And why interventions never succeed.

Several years ago, CESG, cointervening with NRDC, won a case at the licensing board level. Duke was denied permission to tranship 300 spent-fuel assemblies from Oconee to the partially complete McGuire plant. An NRC appeal board reversed this decision. Should we have appealed to the D.C. circuit, the recourse permitted us by regulation? Where such appeals have succeeded, the remedy has not. The matter is referred back to the NRC with recommendations for reconsideration.

The circuit is chary about substantive matters. The NRC resourcefully revises its decision in a way that satisfies its intent, denies the intervenor, and presents the appearance of having responded to the court's mandate. Recall the matter of environmental impact statements. The AEC originally was opposed to them. But, after the Calvert Cliffs decision, who better to write them than the agency itself?

Final license adjudication with competence and without bias is essential to the national interest. How can it be attained? In my opinion, the Federal judiciary is, of our legal institutions, best insulated from special interest pressures. Its major lack, in this context, is a willingness and a capacity to deal with technical issues. That deficiency can be remedied.

I visualize a panel which is given final as well as initial authority in nuclear plant licensing matters. Only procedural matters would be subject to appeal, and that appeal would be to the Supreme Court.

A panel would have five members: a lawyer chairman grounded in governmental and regulatory matters; an economist with a utility regulatory background who would be familiar with the realities of load growth, reserve margins, and generation costs; a risk analyst who could deal with the consequence projections and probability estimates that form a large part of safety analyses; a health physicist conversant with both individual and populational health effects, bioaccumulation, and long-term effects; and an Earth scientist who could assess geological, seismicity, and hydrological considerations.

Competent, unbiased decisions in these matters would, I believe, assure the public of an adequate supply of electricity at lowest rates by making for a more fruitful allocation of capital, by avoiding overbuilding and the nonproductive costs that accompany construction stretchouts and cancellations. Safety considerations would be more realistically addressed in the absence of the appearance of agency infallability. Further, the NRC could put all its energies into its regulatory responsibilities in being a party to an authentic adversary situation.

Senator SIMPSON. Thank you, very much.

Mr. Robert Backus.

STATEMENT OF ROBERT A. BACKUS, SEACOAST ANTIPOLLUTION LEAGUE

Mr. BACKUS. Thank you, Mr. Chairman.

Thank you for your words of welcome, too. My name is Robert Backus. I am a lawyer practicing in Manchester, N.H., where we frequently see members of the U.S. Senate.

Senator SIMPSON. Yes, that is true.

Mr. BACKUS. For the past 10 years, I have represented a citizen's group, the Seacoast Antipollution League, in matters pertaining to the Seabrook nuclear plant.

Much of that representation has involved participation in nuclear licensing proceedings before the Nuclear Regulatory Commission, both for a construction permit and for an operating license.

I have found the experience of participating in NRC licensing to be at once both the most frustrating and the most exhilarating part of my legal career. It is exhilarating because of the selfless dedication of my clients in contributing to the process of governmental decisionmaking.

For more than 10 years, these citizens have planned sales, auctions, raffles, and the like in an effort to make a meaningful contribution to the public decision on the largest energy project in the history of New England.

It is frustrating because I have never found, in any other area of my practice, basically a trial practice, a process so stacked against neutral decisionmaking.

The plain fact is that the intervenors in nuclear licensing do not believe they are participating in a fair proceeding. In the case of Seabrook, the direct result of this perception was the formation of a group which is now well known as the Clamshell Alliance, and which advocated, organized, and lead the most massive civil disobedience action seen in this country since the Vietnam war. I am personally aware that much of the impetus for the formation of the Clamshell Alliance came from the perceived unfairness of the NRC's licensing hearings.

As a lawyer, however, Mr. Chairman, I am committed to the due process of law, and cannot and do not advocate civil disobedience. As a citizen of this democracy, I am further committed to the right of citizens to participate fully in decisions that affect their lives. Rightly or wrongly, no decision seems to many citizens to have more of a potential impact on their lives than does the decision on licensing a massive nuclear facility.

In short, I do agree that nuclear licensing requires reform. However, this reform should be guided by certain basic principles, and not merely by the goal of expediting licensing of nuclear plants.

Those guiding principles should be:

One, a fair and neutral process for the making of decisions, and

Two, an opportunity for meaningful citizen participation.

THE GOAL OF LICENSING

Contrary to industry's self-delusion, the present licensing system is not an impediment to nuclear licensing. No application for a construction permit has even been denied by licensing boards, either under the Atomic Energy Commission or the Nuclear Regulatory Commission.

No court has ever required a nuclear facility to be shut down. Thus, the industry's cry for reform to the licensing process as a solution to its problems is simply, as former NRC Commissioner Peter Bradford has said, "Howling nonsense." Industry's problems lie "not in the stars—nor in the intervenor's—but in themselves."

THE GOAL OF FAIR DECISIONMAKING

The goal of fair decisionmaking can only be achieved by the removal of the licensing decisions from the NRC. In 1974, Congress recognized the problem of conflicting roles in the Atomic Energy Commission, which was supposed to both regulate and promote nuclear power by abolishing the agency, and creating in its place the Energy Research and Development Administration for development and the NRC for regulation. Unfortunately, all that really changed was the stationery. The NRC immediately adopted all the old AEC's regulations, and retained substantially the same personnel.

The result is a continuing institutional bias in favor of licensing, and against nuclear opponents. The NRC through its staff as a party supports license applicants in every contested proceeding, and, then, through its licensing boards, as judges, rules on the applications. Although there is theoretically a requirement of separation between the NRC's licensing boards, or its judicial branch, and its staff, or regulatory branch, in fact the evidence of institutional bias on the part of the licensing board judges is clear.

There is no reason why administrative decisions in nuclear licensing should not be trusted in the first instance to administrative law judges, as are decisions in contested proceedings in other Federal agencies.

In the Seabrook construction permit proceeding, very late in the proceedings, and halfway through a contested issue, the NRC replaced one licensing board chairman, who left abruptly to take a position with another agency, with a new chairman.

The new chairman, then, provided the swing vote which authorized a construction permit for the plant, on a 2 to 1 vote. That, I believe, is the only time in the history of nuclear licensing there has ever been dissent to a siting question before a licensing board.

Since the prior chairman had sided with the nuclear opponents on several key decisions, the appearance of a new and hostile chairman near the end of the proceedings raised the gravest concerns about the fairness of the proceeding.

More recently, in the operating license proceedings for Seabrook, the licensing board has granted every motion, seven, for summary disposition filed by the utility applicant. Some of those motions were granted on the basis that, although the applicant had not complied with the relevant regulatory compliance requirements, it had committed to comply.

I quote from the board's decision on Summary Disposition Motions of May 11, 1983:

> The board finds that applicants have committed, under oath, to comply with the relevant regulation. No evidence has been offered to cause the board to question the credibility of this commitment. To the contrary, an applicant's commitment under oath to comply is treated as evidence that it will comply.

No legal authority is cited to support this novel proposition. The intervenors are left to wonder if anything can ever be litigated under this "lick and a promise" scheme of licensing; surely every applicant for a nuclear license will gladly "commit under oath" to comply with the applicable regulations.

Thus, I submit, fair decisionmaking requires that the judges who decide be, and be perceived to be, impartial. In view of the history of nuclear licensing in the United States, that cannot be achieved as long as the judges are part of the Nuclear Regulatory Commission.

One additional point is that, if the NRC is going to continue to provide the judges to decide on its own staff's review, this should be done after some public process for their selection.

I know that all State and municipal judges in New Hampshire go through a public process of nomination and confirmation in which citizens can participate. NRC judges, on the other hand, spring full blown from the head of Zeus, the NRC. In addition, the process by which particular judges are appointed to panels for the various proceedings remains mysterious and outside of any public participation.

THE GOAL OF MEANINGFUL PARTICIPATION

The goal of meaningful public participation requires two things: First, the continued provision of adversary hearings, and, second, some redress in the current imbalance of resources available to the opposing parties.

With regard to the latter point, I will not discuss funding for intervenors, since I know the political realities are that this is not feasible at the present time.

My alternative suggestion is to set a limit on the amount of resources that the ratepayers and taxpayers can be required to commit in favor of the applicant and staff in nuclear licensing proceedings.

For example, perhaps the utility could be required to spend no more than five times as much on their lawyers as the intervenors do.

The other essential requirement is the continuation of adversary "on the record" proceedings, notwithstanding the practical problems faced by always underfunded citizens groups. The reason why adversary proceedings are essential was well stated by Dean Wigmoore, who said that cross-examination was "the greatest engine for the discovery of truth yet devised."

I can tell you, as most other intervenor lawyers can, of many instances of staff and state officials urging intervenors to pursue safety contentions with utility or government witnesses because public funded participants are not able to do so for political reasons. Without the right to participate as a party and have a decision made on the record, many important issues could be pursued.

In conclusion, Mr. Chairman, 'your committee knows that both industry and opponents are unhappy with the licensing process. Why, then, you might ask should not the Congress just chuck the whole thing and settle for a legistative-type public hearing?

My answer, of course, is that, flawed as it is, the on-the-record licensing proceeding is vital to resolving disputes in such controversial areas as nuclear licensing in a manner supportive of our democratic tradition; that the licensing proceedings are not the cause of industry's problems; and that the proceedings do contribute to the furtherance of nuclear safety.

Thank you.

Senator SIMPSON. Thank you, very much.

We have a rollcall vote. I must leave in a very few minutes.

Let's proceed with Peggy Buckhorn. I think we can get through if you take 5 minutes.

STATEMENT OF PEGGY BUCKHORN, EXECUTIVE DIRECTOR, CITIZENS FOR EQUITABLE UTILITIES

Ms. BUCKHORN. My name is Peggy Buckhorn and I am executive director of Citizens for Equitable Utilities.

I appreciate the opportunity to present this testimony today. Our organization was formed in early 1976 to represent utility ratepayers in Texas who had any organization or utility problem.

Up until January 1979, our efforts were directed at the State level in regular engineering efforts. Early in 1979, I was approached by some people from the south Texas area and asked to attend a meeting about the south Texas project.

I attended that meeting and heard workers talk about poor construction practices, resulting in large voids in concrete, unqualified welders working on the safety related welding and intimidation and harassment of quality control inspectors when they attemped to report this and other construction deficiencies.

At that point, I was asked to attend the first prehearing conference, some 150 miles from the south Texas project site. At that meeting, I stated that CEU represented a number of people living in the Bay City area and it was our intention to file a late petition to intervene.

The proposed new legislation would have prevented this intervention and very significant construction deficiencies would have gone uncorrected.

However, before preparing our petition to intervene, we went to region 4 offices in Arlington, Tex., in an attempt to discuss the problem. I was placed in an open reception area where the public relations director attempted to assure me I was in the wrong place trying to talk to the wrong people at the wrong time.

The director of region 4 came in briefly and stated the same thing. It became quite clear that I would not be seriously listened to by these people who were supposed to be protecting the public interest. It appeared they were only interested in staying in their offices and protecting themselves and the utility who was building the south Texas project.

During the following months, numerous works brought forward more and more information concerning the construction deficiencies. Due to the lack of concern of the utility and NRC at region 4, we felt that if we wanted a properly constructed generating facility, we would have to explore other avenues to force the issue.

At this time, I took information to the U.S. attorney and asked for an FBI investigation, in particular an investigation into falsification of documents. I started talking to congressional investigators of problems at STP and provided workers for interviews.

Additionally, the intervenors made contact with the ABC network 20/20 program and the CBS network. All of these activities took place during May 1979 through September 1979. The intervenors' efforts and assistance to CBS resulted in a nationwide broadcast on 60 Minutes magazine about the problems of the south Texas project.

In November 1979, shortly thereafter, the NRC offices in Washington, D.C., finally assembled a team of experts from across the Nation to conduct a special investigation at STP.

This investigation continued for 3 months and resulted in a $100,000 fine, the first of its kind, and an order to show cause and an I&E report some 3 inches thick document meaning all of the things that the intervenors attempted to bring to the attention of the NRC more than a year earlier.

There were many, many serious problems. Most of the serious problems that we were concerned about were the safety related welding program. Of previously accepted safety related welds randomly selected by the special team for reinspection, only 21 percent passed; 79 percent did not pass inspection. Some could be repaired by grinding and welding.

However, 30 percent of the bad welds had to be completely removed by grinding and 100——

Senator SIMPSON. Ms. Buckhorn, I apologize. I must meet this vote so I will return within a very few minutes and you can conclude, if you would, and, then, we will have Mr. Devine. So I must leave. I am sorry.

Ms. BUCKHORN. That is fine.

Senator SIMPSON. Just a short recess, please.

[Brief recess.]

Senator SIMPSON. It was an interesting vote there. It was raising compensation to $110,000 for Senators. At first it was 4 to 4 and then there was a losing streak and then it was 64 to 4 when I left. A very interesting issue. Yes, now, Ms. Buckhorn. How many more minutes do you require for your statement?

Ms. BUCKHORN. I have just the bottom part of this page and another page.

Senator SIMPSON. If you would conclude that and then we will have Mr. Devine and get to some questions.

Ms. BUCKHORN. I was interrupted in the middle of a sentence. I would like to go back to the beginning of that paragraph.

Of previously accepted—I stress previously accepted—safety related welds randomly selected by the special team for reinspection, only 21 percent passed; 79 percent did not pass inspection. Some could be repaired by grinding and welding. However, 30 percent of the bad welds had to be completely removed by grinding or cutting out and 100 percent rewelding. In addition, the poor quality of X-ray film of the primary cooling loop indicated 16 cracked welds. Followup by the superintendent of mechanical construction determined that every weld in this primary cooling loop was defective. According to Victor Stello in a meeting in Bay City, Tex., on August 19, 1980, the X-rays had not been read by a competent qualified person and many were so defective that they could not have been read even if the person was competent to do so.

The welding program in safety related areas was deficient. Welders were not trained properly and testing was poor. The welding supervisor who complained of this problem was fired. The man who was hired to replace him said in a deposition that "the performance and proficiency level in the welding was horrible." There was substandard concrete placement, nonintegral foundations of containment and turbine buildings and uneven settling of foundations. The misplacement of more than 1,200 anchor bolts——

Senator SIMPSON. Ms. Buckhorn, we have another rollcall vote. I will go now. Senator Mitchell will be chairing the hearing. I will return shortly.

Ms. BUCKHORN. Do you wish me to continue?

Senator MITCHELL [presiding]. Yes, proceed.

Ms. BUCKHORN. The misplacement of more than 1,200 anchor bolts was the result of severe deficiencies in knowledge of metallurgy of anchor bolts and pipe supports and there was a lack of field understanding of stress analysis.

It was determined that there had been a breakdown in quality assurance/quality control. The end result of the intimidation and harassment of quality control inspectors was the attitude that it was acceptable procedure for unqualified personnel to just keep on trying, without concern for time, cost, and most important, reliability of the plant.

Of those persons who knew that they could report problems to the NRC, the majority stated that it would not result in curing the problem. They stated that anyone who talked to the NRC about construction deficiencies was fired. In any case they did not want to talk to region 4 personnel.

Testimony during the first phase of the hearings revealed that although the architect-engineer had stated that 60 percent of the engineering had been completed, less than 10 percent was actually complete. After the construction and engineering deficiencies were revealed, the utility selected another architect-engineer and some months later another construction company.

Recently, for the first time in 8 years, an announcement was made that construction was on time and barely under budget. However, the fact remains that what was originally estimated to cost less than $1 billion, now is estimated to cost more than $5.6 billion. At the time that the utility filed the request for an operating permit, the plant was then one-third complete, with the most critical work yet to be done.

Citizens for Equitable Utilities is not now nor have we ever been an antinuclear organization. When we became convinced that there was the possibility that a reliable generating facility would be built, we reached a settlement with the utility. That settlement provides for constructive participation of a CEU representative in ongoing third party audits of construction quality control.

We must conclude that from our past experience with NRC rules and regulations, had this proposed legislation been in effect, we in Texas would have a nuclear generating facility containing uncorrectable deficiencies resulting in hazardous failures and an unreliable supply of power.

Thank you for allowing us to testify.

Senator MITCHELL. Thank you, Ms. Buckhorn.

I apologize to all of you for not being here. Other business required me to be someplace else. Let me ask whether everyone has now had an opportunity to make a brief statement? You have not, sir? What is your name?

Mr. DEVINE. My name is Thomas Devine, sir.

Senator MITCHELL. Would you proceed, Mr. Devine.

STATEMENT OF THOMAS M. DEVINE, LEGAL DIRECTOR, GOVERNMENT ACCOUNTABILITY PROJECT, ACCOMPANIED BY LYNNE BERNABEI, GENERAL COUNSEL

Mr. DEVINE. Mr. Chairman, thank you for inviting the testimony of the Government accountability project of the Institute for Policy Studies. With me is Ms. Lynne Bernabei, GAP's general counsel. These bills each attempt to reform the process to license nuclear powerplants by streamlining it. Unfortunately, each bill is counterproductive, if reform is synonymous with enhancing public assurance that nuclear powerplants will not be licensed until all significant and safety issues are identified and properly resolved.

To a varying degree, each bill exacerbates two structural flaws which already compromise the legitimacy of the NRC—one, inadequate public participation in oversight of nuclear safety; and two, the absence of an independent system of internal agency checks and balances on the quality of NRC staff investigations and inspections. As a result, these proposals could significantly increase the risk that construction defects will go undetected; and further erode public confidence in nuclear power. Ironically, the bills may even lead to longer, more costly delays by postponing the opportunity for public input until the initial construction cycle is nearly complete. By that point, violations and defects which could have been identified and corrected early will have accumulated, maximizing the scope of necessary repairs.

We base these conclusions on the lessons our organization has learned over the last 3 years during which we have monitored the NRC's oversight of quality assurance programs on behalf of the citizen organizations and nuclear industry whistleblowers.

Since 1980 GAP has represented 12 whistleblowers and 3 citizen intervenors, provided informal assistance to numerous organizations, and interviewed over 100 employee witnesses to faulty construction practices at 6 nuclear powerplants. We have been particularly active at the Zimmer and Midland nuclear stations. At each plant we have represented whistleblowers and citizen intervenors in virtually the entirety of formal and informal forums provided by the NRC.

Our experience at these two plants are summarized below as case studies to illustrate the benefits of public input which S. 893 and S. 894 inherently sacrifice to different degrees.

I would like to give an overview of the generic analysis of the bills.

Our particular concerns with the proposals involve two common themes—restricting the opportunity for public hearings and eliminating the guarantee for adjudicatory proceedings.

The effect of these policies would be to create a bureaucratic gauntlet that threatens effective public participation in safety oversight of nuclear powerplant construction. More specifically, the bill will—

First, substantially shrink opportunities for the public to raise significant safety issues.

Second, significantly decrease the public's ability to serve as a check on the adequacy of NRC factfinding.

And third, significantly reduce the public's ability to challenge questionable policy judgments by NRC staff management.

Our indepth work with whistleblowers and conscientious citizen organizations at Zimmer and Midland illustrates how the three flaws described generically above could translate into public health and safety threats at nuclear lemons already compromised by quality assurance breakdowns. Let's start with issues which could be raised by the public.

The Zimmer nuclear station has now been recognized as "a story of how not to build a nuclear powerplant," in the words of House Interior chairman Morris Udall. Commissioner Gilinsky assessed that "from a quality assurance standpoint, this is the worst plant I've ever seen." He added last October that it will take years now just to identify all the problems there.

It is amazing that the NRC staff failed to report this state of affairs through the first 97 percent of construction. It took the public to expose the problems.

Through some 300 allegations, 3,000 pages of documentation, and 15 statements or affidavits from Zimmer whistleblowers, intervenors in Cincinnati raised the following issues as proposed contentions in an attempt to reopen licensing hearings before the Atomic Safety and Licensing Board: They challenged that one, applicants have failed to insure that the as-built condition of the plant reflects the final version of an acceptable design; two, applicants have failed to maintain adequate material traceability to identify and document the history of all material, parts, components, and welds; three, applicants have failed to maintain an adequate QA program for vendor purchases; four, applicants have failed to maintain an adequate quality assurance program to identify and correct construction deficiencies, in terms of organizational structure and premises; five, applicants have failed to maintain adequate controls to process and respond to internal nonconformance reports; six, applicants have continued a sustain program of illegal retalia- tion against QA/QC personnel who diligently attempted to perform their duties or disclose problems to the NRC; seven, applicants have failed through the quality confirmation program to address or assure adequate corrective action for the full extent of the QA breakdown; and eight, applicants have failed to maintain the necessary character and competence to operate a nuclear powerplant.

Unfortunately, the lesson of Zimmer is more than the value of public input. It also illustrates the unreasonable barriers that already exist to public participation. Although these issues were first raised in May 1982, a hearing has not yet occurred. It is ironic that licensing reform would shrink public access even further.

Second, I would like to address weaknesses in the NRC factfinding efforts.

Clearly, the NRC's program at Zimmer must have failed or the public would not have had to plug the factual holes in the record. Over the previous 3 years, GAP has identified the following breakdowns in the quality of NRC staff oversight of QA at Zimmer:

First, failure to respond to evidence of a massive QA breakdown for years despite prior knowledge, until prodded into action by an embarrassing public whistleblowing disclosure in December 1980;

Second, failure to suspend construction in the spring of 1981, despite contrary staff recommendations and a public petition;

Third, turning over increased authority for quality assurance to the utility in April 1981, although the utility's responsibility for or complicity in the previous violations;

Fourth, suspending a criminal investigation in the summer of 1981, just as it was determining that the root causes of the QA breakdown rested with top CG&E management;

Fifth, censorship of the highly touted November 1981 NRC reports, so that the most serious abuses would not be revealed;

Sixth, attempts to cover up this censorship illegally under the Freedom of Information Act by responding to requests with official denials that records existed, while privately the staff was ordered to destroy or remove the same records;

Seventh, advance warning to the utility before hardware inspections;

Eighth, misplaced reliance on utility records to minimize the scope of the welding recertification program;

Nineth, lax oversight of the welder recertification test program;

Tenth, inability to keep up with the pace of allegations, resulting in a large backlog on significant issues such as welding procedures and vendor QA;

Eleventh, continued unwillingness to work with whistleblowers and other nonmanagement personnel in conducting investigations; and

Twelfth, failure to monitor CG&E's QCP program with more than spot checks except for one task.

In an October 8, 1981, memorandum commenting on a particular Zimmer investigation, NRC Office of Inspector and Auditor Director James Cummings observed, "Fundamentals basic to all investigations were simply not observed in this instance. The investigative file contained no results of interviews at all nor was there any detailed record of copies of the documentation viewed."

Unfortunately, the NRC's internal QA breakdown at Zimmer may not be an anomaly. On August 7, 1981, Mr. Cummings promised to find the answers. He promised a more extensive review of the IE investigative program is planned for the near future, after which we will determine if corrective recommendations are warranted.

The review never was carried out. The recommendations were never made. It was unfortunate that OIA did not have the structural independence to carry out this commitment. In most agencies, an independent Office of Inspector General has control of its own oversight agenda as a watchdog on the agency. At the NRC, however, OIA reports directly to the Commissioners who permitted the NRC staff to evaluate and exonerate itself for missing so many QA violations over the years.

That approach is analogous to what the administration is proposing for utilities on their own certifications of legality.

Because of the lack of agency checks and balances, the public may be the only meaningful institutional safeguard on the effect of NRC's inadequate staff oversight and quality assurance during nuclear powerplant construction.

By minimizing the chances that the public could succeed again, these proposals institutionalize decreased accountability.

Senator **Mitchell**. Excuse me, Mr. Devine, if I can interrupt. I have to go vote now because I only have a few minutes remaining. Senator Simpson will complete the hearing. I will submit questions in writing to each of the members of the panel to which I hope you will provide written responses as soon as possible.

Thank you very much. Why don't you continue.

Senator **Simpson** [presiding]. Thank you, George, very much. Please continue, Mr. Devine.

Mr. **Devine**. At this point I would like to turn the floor over to Ms. Bernabei.

Ms. **Bernabei**. The third reason for increasing and not decreasing public participation at this stage is the need to challenge questionable NRC management decisions. GAP represents Midland intervenor Barbara Stamaris in ongoing licensing and soils settlement hearings at Midland. The progress of the hearings highlights the value of public hearings to fully air the grounds for questionable NRC management policies on key decisions concerning ongoing construction.

The atomic safety and licensing board and the appeals board have been unusually active in monitoring construction of the Midland plant and are often critical of the NRC staff's performance. To a large degree, recognition of the QA breakdown at Midland in the fall of 1982 and the serious steps which Consumers Power Co. must take to insure an adequate QA program came only through years of intervenor effort.

Yet if the proposed administration or NRC licensing process had been in effect during the last 10 years it is doubtful the problems currently the focus of intense NRC and public attention would have come to light.

A short history of Consumer Power Co.'s failures at Midland and the NRC's failure to recognize the seriousness of these problems is instructive.

In a November 26, 1973, letter to the NRC Director of Regulation, the atomic safety and licensing appeals board described Consumer Power's past conduct as a "pattern of repeated, flagrant and significant QA violations of a nonroutine character—coupled with an unredeemed promise of reformation."

In the intervening years since 1973 the QA and hardware problems at Midland have accumulated, not receded.

In a November 19, 1981, report to the advisory committee on reactor safeguards, Thomas M. Novak, assistant director for licensing, outlined significant construction problems identified in the last 10 years. These include: one, 1973—cadweld splicing deficiencies requiring the suspension of splicing activities; two, 1976—rebar omissions and placement errors; three, 1977—a bulge in the unit 2 containment liner plate and misplacement or omission of tendon sheathings; four, 1978—unexpected settlement and cracking of the diesel generator building; five, 1980—quality assurance problems at the Zack Co., the heating, ventilation, and the airconditioning contractor for Midland; six, reactor pressure vessel anchor stud failures; seven, 1981—piping suspension system installation deficiencies; and eight, 1982—electrical cable misinstallation.

Beginning in 1978 region III investigated the excessive settlement of the diesel generator building, and found it was caused in part by inadequate compaction of foundation materials and unqualified field engineers. Not satisfied with Consumer Power Co.'s work, construction permits were lifted to prohibit further soils work until the staff was satisfied with Consumer's proposed plan for the remedial soil work. Yet Consumers Power asked for a hearing on this order and since that time hearings have continued.

Region III's position has been—except for a period in December 1979—that it has reasonable assurance the plants can be constructed with due regard for public health and safety. Yet over the last 10 years there has been no demonstrable improvement in the QA performance of Consumers Power or its chief contractor—the Bechtel Corp. In fact, their performance has deteriorated to the point that in late November 1982, the NRC pressured Consumers to shut down all safety-related construction at the site in light of the inspection findings of a significant quality assurance breakdown. More recently Dr. Ross Landsman, the NRC inspector and soils engineer chiefly responsible for overseeing the adequacy of the remedial soil work, commented that he has begun to lose faith that Consumers Power Co. can pull off the complex underpining of the buildings on site.

The current QA and soils problems at Midland would never have come to public attention prior to Midland's operation without the constant pressure from intervenors and public interest groups to examine the unprecedented problems and determine their root cause, or without the efforts of nuclear employees who brought forward examples of poor quality work at the site.

It is of little comfort to the community around the Midland plants that Mr. Keppler gave his reasonable assurance in 1973 and again 10 years later in 1983, despite a record of deteriorating performance and 1983 statements by the Midland team leader that Consumers Power Co. has no credibility. It is of even less comfort that in early December 1982, after findings of a QA breakdown at the plants, Mr. Keppler released the critical underpinning work and has——

Senator SIMPSON. I very much regret, I think 5 minutes for the one testimony and if you could please summarize so we can get on to the aspects of the bill. That is what we wanted your views on.

Ms. BERNABEI. In summary, we would say that only through an open licensing process has the Midland community been able to hold Consumers Power and the NRC staff to the promises it has made over the last 10 years. In summary, as currently structured, the two bills, Senate bill 893 and 894 shrink public participation at a particularly in appropriate time. It is only through increased public scrutiny of the NRC and the utilities constructing nuclear powerplants that public confidence will be restored.

Senator SIMPSON. Thank you very much, Ms. Bernabei.

Let's go forward now with some questions. I think it would be most useful for me to go through the major provisions of the two bills, that is what we are here to discuss, and ask each of you your views on a number of specific provisions. As you point out in your testimony, a good portion of these two bills in one fashion or another will affect the hearing process for the licensing and regulation of nuclear powerplants.

As I read the Commission's bill, one of the cornerstones of its proposal is the declaration that the purpose of the licensing hearing is to resolve factual disputes. Do each of you agree that the licensing hearing should be focused on resolving disputes or are there other objectives that you feel should be reflected in the legislation.

Very quickly, please, if you could respond. I want to hear each of your views, but if you do that rather succinctly we can get through some serious aspects of specifics.

Ms. WEISS. No, I don't think that is a correct reflection of what the purpose is. One purpose is to resolve factual disputes between the parties. Another purpose is to provide an independent check by an independent licensing board of the staff and applicants work. That is the *sua sponte* authority to review safer questions should not be removed.

Senator SIMPSON. Anyone have anything to add? Each do not have to respond unless you wish to do so? Anything to add to that question?

Ms. BERNABEI. I would concur with Ms. Weiss. One of the purposes is to monitor the safety decisions that are made by the NRC staff.

Mr. RILEY. I would like to add, Senator, only through the public hearing process does one find out the work that has been done by the NRC staff. This work is not necessarily revealed outside the discovery process. Discovery is very useful in eliciting further facts that otherwise would not surface.

Senator SIMPSON. In your comments on an earlier version of this bill, Ellyn, you have suggested to the Commission that in addition to resolving disputes, that the hearing should, and your quote was, "provide a strong and skeptical independent check on the NRC's internal reviews."

Ms. WEISS. I am glad to hear I am still saying the same things.

Senator SIMPSON. I think that was a statement made by Peter Bradford before this committee 2 years ago. Now if these hearings are to serve as a forum for an independent audit by the licensing board or the staff technical review, do I understand you to support mandatory hearings at both the construction permit and the operating license stage, whether or not requested by the public so that the licensing board can review the staff analysis in each case?

Ms. WEISS. I think that the best system would be mandatory hearings for a combined construction permit-operating license with the critical qualification that the design must be essentially final at the time that it is granted and with the other essential qualification that there be an opportunity after construction for hearings directed to the limited issues of whether the plant has been built in the manner in which it was supposed to be built and whether it conforms to the rules in that respect. I think that would be the best system. If we don't have combined CPOL's with final designs—because this committee is well aware the current system allows plants to be licensed for construction on the basis of very vague preliminary design concepts and construction to begin frequently with 5 to 10 percent of the final design work completed. If we are going to continue with that as an option, then I believe there should be mandatory hearings at the CP stage and I don't believe there needs to be mandatory hearings at the operating license stage but there should be an opportunity for a hearing and not these hybrid monstrosities.

Senator SIMPSON. Both bills, then, contain provisions that provide the public with a single opportunity to raise an issue and have the issue addressed and resolved by the Commission. Beyond that, the two bills would restrict the ability of a party to a proceeding to raise that same issue again, if the issue was or could have been decided in an earlier NRC proceeding.

Do you view the relitigation issues as a serious problem that must be addressed on do you support the right an individual has under current law to raise an issue even though that identical issue has been resolved at an earlier stage in the proceeding?

Ms. WEISS. Mr. Backus may want to add to this, I am not sure I would accept that as a description of current practice. The concepts of estoppel and res adjudicata apply to NRC proceedings in the same way they apply across the board in our system and one is not free to raise precisely the same issue that was raised before. I really don't see that that is something that requires the attention of Congress.

I also would point out, my understanding of the DOE bill at least is that not only would an intervenor be prohibited from raising an issue which has previously been raised, he would also be prevented from raising an issue which could have been raised by any party to any other proceeding. I consider that an affront to the constitutional principles of due process since you by that mechanism prevent a person who had no right to appear in a previous case to raise an issue raised by another party. That is how I understand the DOE proposal would work.

Senator SIMPSON. I think one bill provides for cross proceedings, one has to do with single proceedings. Maybe that is where that conflict comes. But in any event, if I understand current practice a specific party is limited in relitigation of an issue, but there is nothing to prevent a surrogate party of empathy raising that issue again and again and again.

Ms. **Weiss**. I don't think that is right. I think that you would be prevented unless you could show some substantial reason why that issue should be relitigated. There is an analog to the way the NRC treats the finding of the Environmental Protection Agency under national pollution discharge elimination permits. Any party is barred from raising issues that were raised before EPA. I don't see why that is the same law that applies to the NRC.

Mr. **Backus**. Certainly in the Seabrook proceeding the licensing board vigorously prevented the relitigation of any issue tried in the construction permitting stage. I know one time there was considerable concern for the need for relitigating the power issue. I know these bills speak to that. Of course, the NRC by regulation has abolished the need for power issues before the proceedings. They have taken care of by regulation although I don't know whether the bills speak to that as well.

Senator **Simpson**. What I am trying to get at is the NRC's previous testimony has been that a party has had this opportunity and then the party is prevented from relitigating and thus a party is barred from relitigating issues previously raised that come within the scope of a proceeding brought by the same party. Different parties are not affected by that. That is the testimony of the NRC and the DOE. They intend to extend the bar to parties which have not participated in the prior licensing proceeding.

Mr. **Backus**. All I can say, Mr. Chairman, is that as a practical matter, the resources of the intervenors are always so low that they cannot afford to litigate issues which have been previously adversely decided. I think you will find—the illusion is intervenors raise every conceivable issue whether it has merit or not. That is just not so.

Ms. **Weiss**. May I ask, Mr. Chairman, if any examples were given in the previous testimony of issues being relitigated?

Senator **Simpson**. They are being provided for the record. When we have them I will share them with you as soon as we receive them.

Mr. **Devine**. I would like to add that at best it would apply to technical issues. When you are talking about concepts such as the breakdown of quality assurance, you can have a good quality assurance program or careful practices in the first stage of construction that may well break down toward the end because of costs and scheduling pressure intensity. There are some issues concerning quality of work at a nuclear plant that are never moot.

Senator **Simpson**. Both bills contain specific language authorizing the NRC to consider the economic consequences of its regulatory practices, recognizing, of course, that the paramount mission of the agency is the public health and safety. Under what circumstances, if any, would you be supportive of such language or do you feel that cost as an issue should not be part of the Commission's deliberations?

Ms. **Weiss**. My personal opinion, Mr. Chairman, is that cost should not be a part of the Commission's deliberations. The Commission is given the task and it is an important one and a difficult enough one to determine what is necessary for safety. I don't think the Commission is in a position to or should be asked to balance that against the cost. If something is required, minimally required for safety, it should be done whether or not it is expensive.

I would also add that to the extent that both of these bills imply or explicitly call for the analysis of cost against benefits, both of them would use as the primary tool probabilistic risk assessment. Probabilistic risk assessment is a complex technique for analysis by computer of questions of risk which employs literally thousands of unverifiable assumptions subject to the manipulation of those who wish to achieve a desired end. It is accessible only to one side of this controversy, simply by virtue of its enormous costs. These shortcomings have been pointed out so many times by so many people, including the Advisory Committee on Reactor Safeguards, whose current chairman has referred to PRA as a sham. That provision for cost benefit analysis which has as its centerpiece probablistic risk assessment is offensive and should be rejected. It provides the illusion of precision and thus an excuse for decisionmaking but not a technically supportable rationale.

Senator SIMPSON. That will be, I am sure, something we will keep coming across and especially when we see the cost of the facilities continue to rise and realizing that the ratepayers are going to pay them. So, when paying the expense becomes the motto—it is hang the ratepayer—it goes right along with that. That might be worth considering.

Ms. WEISS. I would not want it to be suggested that I would say hang the expense and do things that are not necessary but would just be nice to have and hang the expense. When the Commission determines that a modification to a plant is necessary for safety——

Senator SIMPSON. Minimum.

Ms. WEISS. That is right; that ought to be that without respect to cost.

Senator SIMPSON. I think no one has ever disagreed to that, especially the word "minimum" which you used previously.

Ms. WEISS. If nobody disagrees with that, why do we need cost benefit analysis? Where would an analysis of cost assist in reaching the decision as to whether *x* change is necessary for public health and safety?

Senator SIMPSON. That is part of the reason why we are here. We have taken far, far beyond the statutory minimum. We have taken it on to staff whim as to what that public health and safety is, varying degrees of it. That is why we are here.

Ms. WEISS. I would like to have a chance to address that at some point. I think it is the core premise, and it is fundamentally wrong, of both the DOE and NRC bills.

Senator SIMPSON. You are on record with that. Let me go on and if we can come back.

Both of the bills recommend a greater use of hybrid hearing process, an approach whereby adjudicatory procedures would be used to resolve substantial issues of facts with all other issues resolved through informal legislative style hearings. Congress has now gone on record with regard to hybrid hearings with section 134 of the Nuclear Waste Policy Act. Many who have looked at this option, including the comprehensive study on Federal regulation which was first conducted by former Senator Ribicoff in 1977, had been very supportive of that procedure.

Do you view the hybrid hearing approach with the adjudicatory opportunities that it provides to resolve factual disputes as being an effective approach? I heard one comment to the contrary, but I ask that because it is in the law now.

Ms. WEISS. I believe, Mr. Chairman, that these hybrid hearings—and of course the concept of hybrid hearings allows for many variations within it—this variation on hybrid hearings in the DOE bill and also in the NRC bill, although in slightly different ways, in my opinion, contain the most outlandish and onerous special burdens on a party to an administrative proceeding that have ever been proposed in American law. That is true.

Senator SIMPSON. I can't believe it is quite that dramatic but you say it is.

We have hybrid hearings in the EPA on the Clean Water Act in issuing water certificates. We have hybrid hearings under the FTC under the Magnuson-Moss Act and then one I just suggested.

Ms. WEISS. We don't have hybrid hearings that I am aware of that require a party to come forward with all of the facts upon which he relies before he has had a chance to see the other party's case or which require him to show, to prove as a condition to obtaining any cross-examination, that not only are there genuine substantial disputes of fact but that those disputes can be resolved only with sufficient accuracy only by introduction of evidence at a formal hearing and that the decision is likely to depend in whole or in part on the resolution of the dispute.

I am not aware of any precedents for restrictions that onerous. Let me suggest to you, Mr. Chairman, that what we would be writing into the law, what we would be seeing is a wasteful spectable of lawyers arguing for months and months and months over whether these standards are met, how likely it is that this factual dispute, even if a genuine substantial one, that the decision would wholly or partially depend on it. We would see lawyers arguing without ever hearing a word under oath, subject to cross-examination, by the only people who may have something useful to say in resolving the underlying dispute and that is the technical experts. I think it would be a sorry and a wasteful proceeding. I think that the public would be forced to drop out long before the issue was ever addressed in a substantive manner.

Senator SIMPSON. Let's go to another question. Where a party merely wishes to provide views on a particular issue or seeks to discuss an issue of policy and in so doing raises absolutely no dispute of fact, what is the advantage of providing adjudicatory procedures for the presentation of this kind of evidence involving a full opportunity for cross-examination as opposed to a simple expression of such views in written form?

Mr. BACKUS. I think the present system provides for that opportunity without the full adjudication. There are, of course, limited appearances and provisions in the regulations for municipalities to appear, special status. I don't think the system is subject to that sort of abuse right now. Presently you have to set forth the contention with specificity. It is more strict than pleading requirements in the Federal court system. It is not noticeably pleading. You have to set forth your contentions with specificity and with a basis. You have to have a regulatory basis for your challenge to the application. Again, it seems to me the prior testimony is mistaken if it indicates there is a problem in that area under the present system.

Ms. **Bernabei**. I would also like to note there are procedures for summary disposition, just as for summary judgment in Federal court. The idea that the current system provides hearings for other disputes is simply wrong.

Senator **Simpson**. Both bills have provisions that authorize early site approval allowing the NRC to approve a site prior to filing an application for construction of a facility. Under this provision the public opportunity to participate in siting decisions would come at a much earlier stage. The utility would then, of course, have a bit of early resolution of all sides of the issue. Do you support this early site authority and the incentive this should provide, I would think, to resolve such issues much earlier in the licensing process?

Ms. **Weiss**. I am sure you are aware, Mr. Chairman, that such authority has existed at NRC for years. The early site approval regulations have been on the books for many years at NRC. We consider it an unobjectionable principle. We do find several things wrong with this proposal. First, it states that a site approval would be conclusive for 10 years. That means that even if you discovered an earthquake fault under a site you couldn't reopen the suitability of that site and that seems misguided to us. Second, a holder of site approval can begin with the site approval only, even safety related construction of a nuclear plant under the DOE bill without any construction permit, without meeting any standards articulated in the statute without any particular review whatever upon 30 days notice to the Commission unless otherwise ordered by the Commission or State.

The site approval becomes for all practical purposes a construction permit although granted before the review of the design. I think that is wrong.

Senator **Simpson**. Let me come back to Mr. Backus and Ms. Bernabei, just to conclude your last remarks, I think I heard those. Are you suggesting then that you might be supportive of using adjudicatory procedures only for factual disputes?

Mr. **Backus**. No, I am not, Mr. Chairman. I think the nuclear power controversy is perhaps almost unique in our society. I think these hearings need to serve the preservation of democratic values and a sense of an opportunity to participate in the process as well as resolving factual issues. Ultimately I don't believe the issues on nuclear power revolve around numbers or technicalities but about value issues.

Senator **Simpson**. I guess I have a problem with your brief statements because you are saying, in a sense, that all you argue for is factual disputes.

Mr. **Backus**. I guess all the issues that we raise do involve factual issues, but I know one of the things the utility doesn't like is that they will say this isn't like a usual lawsuit where we are trying to determine whether somebody drove negligently, some historic event. This is about trying to decide, in the case of a construction permit, whether the site will be constructed safely. It is a rather difficult issue that way and has to be a mixed issue of fact and values. I only say it seems to me it is a very typical use of our adjudicatory system in our country. We do that in utility rate cases and any number of issues.

Senator SIMPSON. I heard someone mention, Wigmore on Evidence.

Mr. BACKUS. I did.

Senator SIMPSON. You did that. I found another quote about Wigmore on Evidence. It is very short. Here is what Wigmore said, "It has never been supposed that a party has the absolute right to force upon an unwilling tribunal an understanding and superfluous mass of testimony limited only by his own judgment and whim."

Mr. BACKUS. I have not offended Dean Wigmore in that regard, Mr. Chairman.

Senator SIMPSON. Some have, on both sides, I think, offended Wigmore in that area. Let me ask you a couple of other questions.

In testimony presented by the NRC, as well as by industry witnesses, every person noted there is currently very little, if any, incentive to submit more complete design information at the construction permit stage. I think that is a given, primarily for two reasons we find. Issues resolved at this stage can be relitigated at the operating license stage and the second one is that NRC's requirements are constantly undergoing change. An approval at the construction permit stage may be subject to change by the NRC at the OL stage. This is a key question. I don't play fun and games. I am not here to snare anybody. I try to wade through these highly emotional issues and see if we can get some sharp, commonsense without a lot of stuff because that is easy to do. The easiest thing in this game is get a microphone and get everybody all juiced up. It is not very productive.

It has been done for centuries. Here is the question: Does not the current approach essentially result in the design-as-you-go kind of a system, that is the method of constructing a plant, with every single attendant quality assurance defect in that kind of procedure? Can't help but be, and if so, do you support these provisions in the legislation that provide more incentive to submit more complete design information prior to the start of construction so that we might get away from the situation where the utility, naturally, within 10 percent design and then we are going to go along and design as you go and guess what happens, quality assurance, the things you believe in and I believe in are always going to be just shattered under those circumstances.

They can't help it. So if we can get to a 75-percent or 80-percent design at those early stages and, bank standardization, all the other things, does that not make sense?

Mr. BACKUS. I think that makes eminent sense. The whole concept, standardized design, early approval makes sense. The trouble is I don't think it fits the real world. This Nation has not been able to standardize the three bedroom family house. I don't think that is an issue that can be resolved by the Congress in these bills. If it could happen then in theory it would make perfect sense. Have decisions made early on.

Senator SIMPSON. How about a situation where we put a thing in the air called a 747 that gets certified way back down the process and that is it. Pretty dangerous instrumentality if you wish it to be so. How about food and drug which we certify at a stage way back down the proceeding and that is it. How do you ignore those realities of life in certification, if we went to standardization and some kind of sane design within the 60-, 70-, and 80-percent range at the early stage of the proceeding?

Ms. WEISS. Mr. Chairman, I don't think anybody on this panel has any objection to standardized designs. We have endorsed it for years. I see no problems to standardized designs. I think it is ill advised to say that a standardized design should be conclusive no matter what we learn. There has to be some safety valve in there. In the case of the TMI-2 accident, you would not want to have sanctioned duplicate TM-2's after the accident. Nobody quarrels with standard designs and nobody quarrels with the idea that design-as-you-go is terrible and is the root cause of most of the problems in the nuclear industry. I don't see any reason why that shouldn't be addressed in a straightforward manner, that is, require essential final designs before a construction permit is issued.

Ms. BERNABEI. I would also comment on the quality assurance area that our experience is the majority of quality assurance problems are encountered in the construction area, that the plant is not built as designed. I don't think there is a lot of opposition to a complete design prior to approval.

Senator SIMPSON. Yes, sir.

Mr. RILEY. Mr. Chairman, this is a somewhat different perspective than has been taken by my fellow panelists, but we are in the midst of a learning experience on nuclear power. I think that is not only true for the NRC which keeps putting forth new technical regulations but also for the utilities itself which has its project objectives which are to improve plant safety. Mr. Lee's testimony which you received a few days ago makes something like eleven references to safety on a single page. There is an obsession with safety which is a recognition of danger.

We are still in a learning experience which means to me that one possible conclusion of this learning experience which is not in any way addressed by this legislation is that we will eventually realize that imperfections in human behavior and faults in construction materials, devices and instruments are such that we should not take the risks. I simply counterpose that to the assumption we can rationally work out something that is going to proved ultimately beneficial because to my judgment I think there will be a very good chance it will not be proven beneficial and we will reject the entire thing.

Senator SIMPSON. That is a long held view of yours, is it, sir?

Mr. RILEY. Yes, sir, it is.

Senator SIMPSON. Turning to an issue that has been of great interest to me, I want to ask you a couple of questions between the connection of licensing process and quality assurance. I want to pursue this. Your testimony treats these two issues as if there is no connection between them. I was alluding to that a minute ago. Urging that rather than addressing licensing reform that our time could be more productively spent on quality assurance issues. That is what you have said in a sense every one of you. Yet your participation in numerous licensing hearings presumably to improve the quality of plants suggest otherwise. I wonder if you might tell us whether the licensing process has a bearing on the quality of the plant and, if so, whether it might not be possible to improve quality by improving the licensing process. I do not see how you can have it both ways.

Ms. **Weiss.** Would you like me to address that?

Senator **Simpson.** Yes, I would.

Ms. **Weiss.** I do not think that the root cause of the quality assurance problems is the procedures that NRC follows for the licensing of plants or the contents of the Atomic Energy Act. I think that it is rooted in fundamental problems of competence at the NRC and it is rooted in the fact that the Commission comes at the end of a 30-year history of the Federal Government's active promotion and subsidization and boosterism of the nuclear industry and it is not an arms-length regulator, there is no neutral adjudicator.

I believe if you left the procedural rules precisely the way they are, and have independent ALJ's and you started to have some decisions where the construction of a plant might actually hinge on one's ability to construct or operate a plant, might actually hinge on one's behavior, I think you would trigger different behavior in the corporate community. Right now the system is the most stable system I am aware of in that it always grants a license and the NRC staff always supports the granting of that license. If you gave the public a fair forum I think you would see prophylactic effect trickle throughout this system. It would change the behavior of the utilities and change the behavior of the NRC.

The dynamic of the regulatory system is a serious problem because the NRC starts off me-tooing the utility and ends up protecting its own bureaucratic behind. Pardon me for lack of a more eloquent way of phrasing that.

Mr. **Devine.** Mr. Chairman, I would like to add that sunlight is the best disinfectant and I believe there is a lot of gook that we need to clean out of the quality assurance programs at nuclear powerplants. In our experience, the potential effectiveness of licensing hearings as a check on quality assurance problems is demonstrated at Zimmer by the fact that the utility executives have been hiding and running from those hearings for approximately a year now. Their extreme concern and even with regard to informal public meetings raises questions about the way the management is overseeing the quality assurance program suggests that the potential failure in terms of accountability could be expored if we got these issues out into the open.

I don't think that quality assurance problems are just a matter of poor planning of design and not getting it done at the beginning. It is very much a management problem and that is a very great value of licensing hearings.

Senator **Simpson.** It is also a serious oversight problem. That is this subcommittee's function. That is why I was surprised a bit in your testimony, Ellyn, where you say the Senate should investigate, and it has not done so to this date, some of the hair-raising quality assurance failures in plants around the country.

Ms. **Weiss.** My legislative counsel would add a parenthetical to that.

Senator **Simpson.** I simply point out to you that the U.S. Senate, my colleagues, Democrats and Republicans alike, originated the very first comprehensive legislation on the quality assurance issue, section 13 of the NRC authorization for fiscal years 1982 and 1983. I really have trouble tracking that.

Mr. **Faden**. What we were referring to, Mr. Chairman, and I will take responsibility for that line, is a comparison between the record, and I don't mean to do this in a denigrating way, it is the record of the House committees. You have several subcommittees who maintained consistent attention to this issue over the past couple of years. I am speaking particularly with regard to the simpler case where Mr. Udall's committee held several hearings. He is now holding one on Midland. There have been a number of hearings on the Diablo Canyon case, what happened there, why it happened. Again that is all on the other side of the Hill, with all due respect to this side of the Hill. I am not just talking about this committee but there is another that claims some jurisdiction in this area.

None of them have seen fit to delve into the whys and therefores to find out where the breakdowns occurred and what they mean. You did produce the section of the NRC authorization act which we are grateful for. That section essentially mandates a study and NRC is in its normal manner turning that into an endless study and a study of how to do the study. We don't think that is going to by itself result in any significant reevaluation. We think you need to keep the pressure on.

Senator **Simpson**. I understand that, and over in the House, too, you have five subcommittees all claiming various jurisdictions, some of them without even having it. What do we do there? That is not for me to fret about. It is puzzling how they choose to divide it up and do it. But we do have a task to do and so we try to do it here without light and that is what we are out to. Legislating is the driest form of human experience if it is done properly. It is not dramatic. It is not even newsworthy. That is why the objection comes to emotionalism, it always receives rare attention. Who wants to mess around in two dry, crisp, tinder dry packets of bills from the NRC and DOE on this issue, but somewhere in there is some good stuff. I would think you would be just as interested in finding as I would, if we can get to 80 percent design or 70 percent design or standardization and health and safety for the country, premium quality assurance, you want that just as much as I do, and there are some behaviors here to pursue, hybrid hearings, getting cross-examination, public hearings, I always believed in those bills.

I sponsored sunshine laws when I was in the legislature in another land. That is what we are up to. There is no hidden agenda. I don't play that. But there are some awfully hard decisions to be made whether you are for nuclear power or against nuclear power.

They come from legislation. They don't come from just hearings for the sake of hearings.

So let me ask a couple more questions. On the back-fit issue, Secretary Hodel testified last month that under the provision recommended by DOE, if the risk to the public health and safety posed by a particular facility was ever determined to be below that required by the Atomic Energy Act, the NRC would be able to take immediate action without regard to the back-fit standard to impose necessary requirements to bring the plant back up to the level of protection required by the statute.

Is there any question, then, that the provision in the DOE bill would do nothing to impair the ability of the NRC to ensure that every single plant operates in conformity with the atomic energy market?

Ms. **Weiss**. I have a great deal of question about that, Mr. Chairman. That is because of a subject which I touched on earlier. Mr. Hodel was quite candid that the core of the back-fit provision is probabilistic assessment.

One can only determine whether the appropriate level of overall safety, whatever the level may be, is met or not met by probablistic risk assessment. We believe the evidence is overwhelming that the problem of the state-of-the-art PRA is not sufficient to answer that question with anything approaching adequate precision.

One can get numbers, one can get point estimates, one cannot reduce uncertainties below certain very, very large ranges, factors of 100, it simply is not possible in the current state of the art.

I quoted to you the current chairman of the ACRS, who said PRA is a sham, we will always be making these decisions, let's admit that they are the result of engineering judgment of some highly qualified and experienced people. PRA is an excuse, it is not a rationale.

Mr. **Faden**. May I add a point to that answer?

Senator **Simpson**. Yes, Mike?

Mr. **Faden**. The DOE back-fit provision is in its standard very similar to a rule, a proposed rule—it is not even a proposed rule yet. The report of NRC's own regulatory task force—NRC has not adopted that standard.

I think, very bluntly, the reason why is the staff over there believes it will impair their ability to make sure the plants comply with the act. I don't know if you will ever get them to say so out here. I think we need to bring all this out. That is why the industry and DOE are coming to you to do it because they cannot get the NRC to agree this is the proper standard.

Ms. **Weiss**. I also think, Mr. Chairman, we have to define backfit before we can deal with the problem. I think the industry has defined it very losely and incorrectly. There has been a great deal of money spent in the past few years changing plants, most of that is attributable to TMI. But you should understand that with one exception that I am aware, none of that involved the application of new regulations, and this is typical.

What happens is that the NRC rules are very vague. With very few exceptions, they take the form essentially of platitudes. Thou shalt have a good decay removal system. Thou shalt be protected against fire, for example.

A license is granted on the basis of a licensee's commitment that he will meet that rule. Later on, through the result of research or through the result of an accident or malfunction, we discover that, in fact, the rules that were in effect at the time the plant was licensed were not met, and most of what is now categorized as back fits is not the application of new regulations, it is merely the effort required to bring these plants up to the standard which they were supposed to meet at a time they were licensed.

It seems to me pretty clear that the DOE back-fit provision would prevent even changes to a plant that would bring it up to the standards that were in effect at the time it was licensed and which it was supposed to meet.

Senator **Simpson**. I don't know, maybe I hear differently, but I think the money, is it not, is that the proposed DOE backfit standard does not apply, if the risk of the plants is ever below the level required by the Atomic Energy Act.

Ms. **Weiss**. If you could answer that question. It's a chimera; that question cannot be answered. One must grapple with that before accepting a back-fit provision that is based on the fundamental assumption that we can answer that question in a noncontroversial, scientifically justifiable, even remotely precise manner.

Senator **Simpson**. I think I have touched upon something you feel deeply about, obviously.

Ms. **Weiss**. Yes.

Senator **Simpson**. But that is what we are talking about because that is an endless process. That is like perfection and you don't have it in your life and I don't have it in mine and that is the way it is, that is called life.

Maybe it is the foulest four-letter word but that is what it is. So, if we have a situation where the back-fitted standard does not allow the risk to go below the level required by the Atomic Energy Act, that well may chill you, but the issue is that is the way it is.

I am just very curious. Let me ask this: Is this any other industry you know or activity you are aware of for which the Federal Government establishes a statutory standard, call it excellence, if you want, call it perfection, if you want, call it health and safety, if you want, a statutory standard that must be met, issues then an approval to undertake that activity after finding that the statutory requirement has been fully met and then imposes additional requirements to achieve a level of perfection and protection that goes beyond what is required by that statute, is there any other that you know of?

Ms. **Weiss**. I don't think there is any, including NRC. That is certainly not a description of the way the NRC works.

Mr. **Riley**. I feel that the problem really is illuminated by the state-of-the-art problem in the regulation of aircraft. As learning experiences have occurred, new regulations have been put in but we are not in the position, as far as we know, to define what perfection will be. The perfection of 1970 is not the perfection of 1983.

Let me see if I can communicate on one other very important key point that has to do with the use of words. The word is "probability." Our insurance people base their probability judgments on the real world acturial experience. I must point out that the probability we hear about from the NRC speculative probability; what some expert thinks the likelihood will be given time to accumulate the actual experience.

This is not real world probability. This is speculative.

Senator **Simpson**. Let me ask you, in your testimony, you actually recommend that Congress revise the licensing process in the opposite direction. From that suggested by DOE and NRC.

What in particular, then, do you recommend?

Mr. RILEY. I particularly recommend that the conflict of interest be dissolved and the adjudicatory body be made completely independent from the pressures of the industry or the agency. Item 1.

Item 2, I would like to feel that that adjudicatory body could make a judgnent that the entire industry puts the country at too much risk to continue with it and it could make that conclusion stick.

I also would like to make a real-world remark with respect to whether or not there should be a separate operating license and a separate construction-permit hearing.

I was a party in the McGuire proceeding. The operating license proceeding took place in 1976 and 1977.

I succeeded in reopening it in 1981. The plant not only went on line in 1982, I point out there was an enormous time gap between when the company was able to put that plant on line and when the proceeding took place.

I feel that because quality matters are in the real world, they have to do with what welders and other artisans made and the observations made on their work by inspectors, that there should be a final look-see at the plant to see whether it realized what was intended on paper at the construction permit stage.

Senator SIMPSON. I think that you are, sir, being very honest. You are saying that you do not favor in any way nuclear power.

Mr. RILEY. That is correct.

Senator SIMPSON. I know.

Mr. RILEY. Because nobody is going to be around to monitor these wastes which even the best run of nuclear plants are going to make. That is a problem we have shoved off to one side.

I think it is fine to focus on safe licensing but I don't think we should ignore the waste problem.

Senator SIMPSON. I ask anyone else on the panel if they share that view of Mr. Riley.

Mr. BACKUS. I don't exactly share that view and I do want to speak to the last issue you raised, the illusion this is a very tightly regulated industry that has to go beyond certain safety requirements initially set out in statute in order to do business.

I would just suggest if we can achieve a level of safety in the commercial nuclear power industry, that the nuclear, Naval nuclear propulsion program is achieved, we go a long way to accomplish what we need.

We know in the Seabrook case that the welders on the site who have worked for Electric Boat, Groton, Conn., are very upset about quality control.

The quality control is not the same there as there are in these commercial projects.

Senator SIMPSON. I am concerned about it, too, I can assure you. Again, I assume that all of you agree, with the exception of Mr. Riley, who has been correct and honest, do you believe there is a future for nuclear power properly regulated, properly controlled, properly meeting every statutory standard or did you not?

Mr. BACKUS. My own view, Mr. Chairman, is nuclear power can be made safe and when it is made safe, it is not economic.

Senator SIMPSON. Thank you very much.

Mr. DEVINE. I believe we are minimizing the opportunities for nuclear power as we sacrifice due process in the licensing system. I believe the only way nuclear power is going to have a chance to be a legitimate energy source is if the public is fully foward and involved with oversight of the safety questions.

To say that NRC staff will take care of you, and you don't need to participate in these licensing problems or the utility will certify that these plants are safe is an invitation to public ridicule, Mr. Chairman, and it is very destructive to the process of nuclear power.

Senator SIMPSON. That is why we have so many areas of public participation in proceedings.

Ms. BUCKHORN. Mr. Chairman, our organization has gone on record in stating that we believe that our Nation, in order to survive and to progress, needs integrated power sources—all kinds.

It is our position that we believe that a nuclear powerplant can be built as safely and operate as safely as one of the most complex chemical plants because you have inherent problems in chemical plants as you have in nuclear plants.

The problem is that when you try to build the nuclear plants with the companies who are doing it and you do it properly the first time, that doesn't make your company any money.

That was the thing we ran into down there. We have horrendous cost overruns because a number of the people there said, well, if we can't do it over a coupe of times, we don't make any money, I don't get any overtime.

But, yes, nuclear power, I think, is a necessary part of this Nation's future and I think it can be done properly and I think it's a crying shame that it has not been done properly to this date. And I think the intervention process is a necessary process because how would we get these problems to the attention of both the NRC—and I must say, I have a very poor opinion of the NRC in my region.

I am not that familiar with other regions throughout the Nation, but they are totally inept and bumbling and often work in collusion with the utility.

I was recently—I say recently, last year—assisting at hearings at HEP. One of the inspectors was caught falsifying one of the I&E reports. It was proved in testimony and he walked outside the hearing room and up to one of the utility managers and he says, "Well, boy, I'm in trouble, what are we going to do now?"

What are we going to do now?

Senator SIMPSON. That happenes in every walk of life. I am an attorney and I have seen some real screwballs. That is the way that is.

Ms. BUCKHORN. This is a particularly unforgiving technology and we need properly qualified people to do that.

Senator SIMPSON. I must be on to other efforts. I really appreciate your views. They are very firm and direct and candid. I like that. I try to do that myself.

There is an issue here that might be a vehicle for us to get to things we both agree on, I think. That is a complete public participation with cross-examination and resolving an issue and then moving onto another issue instead of going back to the other one or going back through subterfuge or nuance or surrogate.

That would be one, and, then, design, maybe something like 70 percent design early upfront, standardized design so that we, then, have quality assurance, a continual monitoring and all with the prime touchstone of the public health and safety.

That is what I want. I am not here to carry water for the nuclear industry. I am just as offended. I won't vote as just one of those who say nobody has ever been killed. My voting record certainly proves that it is rather shabby in that area.

We have lots to do and it can be done. I enjoy visting with you independently. Should you wish to communicate, do so.

I thank you, very much, for coming here and sharing your very rich feelings.

Thank you, very much.

This concludes the hearing.

[Whereupon, at 12:20 p.m., the subcommittee recessed, to reconvene at the call of the Chair.]

[Statements submitted for the record follow:]

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TESTIMONY OF ELLYN R. WEISS

GENERAL COUNSEL

UNION OF
CONCERNED SCIENTISTS

Before the

SUBCOMMITTEE ON
NUCLEAR REGULATION

of the

UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT
AND PUBLIC WORKS

June 16, 1983

On NUCLEAR LICENSING LEGISLATION

I thank the Committee for the invitation to appear today to discuss S.894 and S.893, the DOE and NRC versions, respectively, of proposals to change the system by which nuclear plants are licensed and regulated.

I am a member of the Washington, D.C. law firm of Harmon and Weiss and have been General Counsel to the Union of Concerned Scientists (UCS) for six years. From 1973-1977, I was an Assistant Attorney General for the Commonwealth of Massachusetts. I have represented clients on a variety of environmental, nuclear safety and energy policy issues before the AEC and NRC for ten years.

The Union of Concerned Scientists, on whose behalf I appear today, began in the late 1960's as a small group of scientists, teachers, and scholars in Cambridge, Massachusetts concerned with the challenges posed to modern society by technology. UCS has grown to a national organization supported by the contributions of over 100,000 sponsors, with professional staff in Cambridge and Washington, D.C. UCS has published independent technical and policy reviews in the areas of nuclear arms, energy alternatives, waste disposal options and nuclear power plant safety. UCS has participated in many significant safety related proceedings before the AEC and NRC for over a decade. We are pleased to present our views on the issues before this Committee.

INTRODUCTION: THE QUESTION OF MINDSET

With remarkable regularity, the nuclear industry importunes each session of Congress for what they euphemistically refer to as "licensing reform." The singular, unchanging characteristic of these proposals is that they always have as their centerpiece explicit or implicit hostility to the rights of the public to participate in and influence the decisions of the NRC.

We have also noted a disturbing trend in these proposals over the years: as the nuclear industry's troubles mount, as safety problems proliferate, as too many plants undergo astonishing quality assurance failures, and as some projects collapse in an economic heap, the industry's mechanisms to limit public participation become more and more Draconian. It certainly appears as if the intent of these proposals is to kill the messenger bearing the bad news; the worse the news becomes, the more urgent his demise.

I have appeared before this Committee previously on behalf of the Union of Concerned Scientists to testify on licensing "reform." My testimony has generally approached these proposals straightforwardly, conceding that "efficiency" is a viable goal, critiquing each element of the proposals at hand on their substantive merits, and suggesting less drastic alternatives. This year, however, I cannot in good conscience accept that licensing "reform" is an effort worthy of this Committee's time and energy.

It is unconscionable that the Congress should be seriously considering this legislation, particularly the DOE bill. The nuclear industry's problems will not be solved by curtailing adjudicatory hearings, restricting cross-examination, eliminating pre-operational hearings or placing procedural and cost-benefit restrictions on backfits so onerous as to prevent the correction of serious safety problems. On the contrary, adoption of these proposals will simply hide many of the problems from public view and make it less likely that they will be addressed until after the next accident or near-miss.

How many times will those who favor public participation have to prove that the purported "delays" in licensing plants are not attributable to hearings to any significant degree? How many times will examples have to be given of important safety issues raised by the public which had been disregarded by NRC and the industry? We will not here attempt to replay these hoary arguments; your files from the extensive 1977-8 hearings contain more than enough evidence of the value of the licensing process and the real causes of construction delays.

The attached Energy Daily article -- entitled "Doing It Right In The Nuclear Business: Two Utilities Prove It's Still Possible To Build Nuclear Plants In Six To Seven Years" -- should finally put to rest the complaints of those utilities that cannot manage their own projects. As Tom Woods, the executive vice-president of Arizona Public Service, candidly admitted to Energy Daily, "NRC and the regulatory side has not been a problem (in the construction of the three Palo Verde units)...I think it's a lame excuse that many executives use when they get into trouble."

At this point in our history the burden of proof must be on the nuclear industry. How does the industry explain Zimmer, Salem, Diablo Canyon and South Texas -- not to mention TMI-2? This Committee should not so quickly forget the findings of NRC's own Special Inquiry Into The TMI-2 accident:

> Insofar as the licensing process is supposed to provide a publicly accessible forum for the resolution of all safety issues relevant to the construction and operation of a nuclear plant, it is a sham. (p. 139, emphasis added)

As both the Special Inquiry and the Kemeny Commission advised, the Senate should be drafting legislation to enhance public participation. Instead, these bills would wipe out most remaining vestiges of effective citizen participation. Rather, the Senate should investigate (as it has not done to date) some of the hair-raising quality assurance failures at plants around this country to determine how in each case, NRC and the utility had pronounced themselves satisfied with the level of design and construction only to discover, most often through the disclosures of plant workers and/or intervenors, that the quality of work was far from satisfactory. Yet, if DOE's bill is enacted, operating licenses would issue essentially automatically, with no meaningful opportunity for public scrutiny.

The Congress should also be drafting legislation to ensure that plants do not operate without adequate emergency preparedness. Unfortunately, the NRC seems to be proceeding in the opposite direction. The Commission's recent vote allowing Indian Point to continue operation has utterly eviscerated whatever force the emergency planning rules may have had.

In addition, many important safety problems are still unresolved, despite the Kemeny Commission's condemnation of this longtime NRC practice:

> NRC's primary focus is on licensing and insufficient attention has been paid to the ongoing process of assuring nuclear safety. An important example of this is the case of "generic problems," that is, problems that apply to a number of different nuclear power plants. Once an issue is labeled "generic," the individual plant being licensed is not responsible for resolving the issue prior to licensing. That, in itself, would be acceptable, if there were a strict procedure within NRC to assure the timely resolution of generic problems, either by its own research staff, or by the utility and its suppliers. However, the evidence indicates that labeling of a problem as "generic" may provide a convenient way of postponing decision on a difficult question.
> Report of the President's Commission, p. 20 (emphasis added)

It is profoundly ironic that the backfit restrictions contained in the DOE bill would very likely ensure that even if the unresolved problems are finally resolved, NRC would not or could not lawfully require the current generation of plants to make the needed safety improvements. In this context, as in so many others, DOE's bill moves in precisely the opposite direction as the Kemeny Commission recommended. That Commission found:

> The old AEC attitude is also evident in reluctance to apply new safety standards to previously licensed plants.

Report of the President's Commission, p. 20

The Kemeny Commission recommended that, unless additional safety improvements would be "clearly outweighed by cost considerations, there should be a presumption in favor of the safety change." (Id. at 63, emphasis added)

The bills before this Committee are a distraction, and a dangerous one. It is the instinct of a dictatorship, when embattled, to attempt to silence the uncomfortable voices of dissent. I am very much afraid that the industry's goals, embodied in the DOE bill, evince the earmarks of this intent.

In this connection, Secretary Hodel's testimony that the DOE proposal would enhance public participation by permitting it at the standardized design and early site approval stage is seriously misleading. Full adjudicatory hearings are already permitted by NRC rules at these stages. The DOE proposal would eliminate these, allowing only "hybrid" hearings. Moreover, it would totally eliminate the right to a hearing at the operating license stage of a combined CP/OL and the current mandatory hearings at the construction permit stage. These proposals hardly constitute enhancement of public participation.

The irony is that, in this case, the voices of dissent are a majority. According to a recent public opinion poll, commissioned by the nuclear industry itself, a majority of the American people are now opposed to nuclear power. As reported in Nuclear Report (published by the American Nuclear Society's Washington office) of May 5, 1983, a poll conducted by Cambridge Reports Inc. found that 33% of the sample favored nuclear power and 55% opposed it. As Nuclear Report pointed out, this result "is the lowest level of support nuclear power has ever had, including immediately after Three Mile Island, and represents a steady decline from overwhelming support in the early 1970s."

This result is highly consistent with those of other recent objective nationwide surveys. For example, a November 1981 NBC News/Associated Press poll found that:

> A majority of the public — 56% — do not want more nuclear power plants built in the United States. This opinion is the reverse of our findings four and a half years ago, when nearly two-thirds of the public favored new nuclear power facilities. (Poll #72, 24 November 1981)

This NBC News/AP poll found that only 32% of the public believed that more nuclear power plants should be built in the U.S., while 56% thought they should not be built. In addition, 63% of the sample believed that the future energy needs of the United States would be better served by more conservation and expansion of other energy sources, while only 18% thought they would be better served by expanding nuclear power.

The Kemeny Commission's central finding was that:

> To prevent nuclear accidents as serious as Three Mile Island, fundamental changes will be necessary in the organization, procedures, and practices -- and above all -- in the attitudes of the Nuclear Regulatory Commissionn and, to the extent that the institutions we investigated are typical, of the nuclear industry.
>
> The Commmission is convinced that [NRC's] attitude must be changed to one that says nuclear power is by its very nature potentially dangerous, and, therefore, one must continually question whether the safeguards already in place are sufficient to prevent major accidents.
> Report of the President's Commission at 7,9 (emphasis added)

The DOE bill embodies precisely the mindset and attitude condemned by the Kemeny Commission. It should be summarily rejected.

The NRC bill, while more reflective of the need to retain at least a minimal level of public participation, contains a number of regressive procedural steps and encourages compromises on essential safety protections.

Most importantly, the Commission could adopt any of the "desirable" features of the NRC bill on its own, without further legislation -- a fact the Commissioners have essentially admitted in previous testimony before this Committee. As the NRC's own documents demonstrate (see the memoranda of February 8, 1983 from Commissioner Ahearne to the Acting General Counsel and from Acting General Counsel Malsch to the Commission, submitted for your files), the bill adds very little to the NRC's legal authority. For example, Commissioner Ahearne points out in his memo that the bill would "allow NRC to label a licensing document as a combined CP/OL (although the NRC could, under current law, issue a document with the same effect)". In addition, early site approval and standardized design approval have for years been part of NRC's rules.

The Commission has come to you for what they call the "imprimatur of Congress". They do not seek detailed answers to specific policy questions -- e.g. what level of safety should we strive for in backfitting, what kind of administrative hearings should we hold? On such points their bill is intentionally vague, or allows more than one option (e.g. hybrid v. adjudicatory hearings). Rather they are looking for a basic level of reassurance on the direction they would like to take -- a legislative version of the kindly pat on the head.

What this all adds up to is a colossal waste of time. The Commissioners during the past year spent innumerable hours splitting hairs over the wording, not only of this bill but of the section-by-section analysis! All the while the resolution of serious safety issues has been continually postponed, the TMI "lessons learned" are as much forgotten as implemented, the impasse on emergency preparedness became a crisis at two sites, and major quality assurance failures and enforcement bungles have followed each other like tin soldiers on parade.

The NRC and Congress should focus on the real problems of the nuclear industry, instead of letting their agenda be set by the scapegoating of those in the industry who cannot recognize or admit their own shortcomings. Serious consideration of this legislation -- either bill -- would send the wrong message to the industry and the NRC itself: namely, that boosterism is on the ascendancy, and the post-TMI emphasis on strengthening safety was only a passing fad. While certain Congressional bodies -- most notably the Bevill subcommittee of the House Appropriations Committee -- have never really graduated from their pre-TMI mindset, we hope for more from this Subcommittee.

THE BILLS

Let us now turn to the basic elements of both bills: restricted backfitting, single-step licensing, hybrid hearings, early site review, and pre-approval of plant designs. We will not take the time to exhaustively analyze each section of both bills. Rather, we will only point out the most serious problems with the bills' treatment of each element.

Backfitting: Under Section 29a in S. 894 (the DOE bill), no "addition, deletion or modification" to a plant could be required unless the Commission determines that it "will substantially enhance" public health and safety as a result of "improved overall safety". This must be "justified when considered over the remaining life of the facility".

This Committee should understand that the term "backfit" is used very loosely and in our opinion, unaccurately, by licensees who claim they have spent large sums of money on backfits. The overwhelming majority of changes required to plants are not a result of applying new regulations but are needed when it becomes apparent, too often belatedly, that the plant does not in fact meet the regulations which it supposedly met at the time it was licensed. Most of NRC's rules are very vague; many consist of little more than platitudes: thou shalt be protected against fires, thou shalt have a reliable system for decay heat removal. There is often very little review of the manner in which the rules will be met. Licensees' committments are accepted as a basis for licensing. Later, after an incident at some plant or the results of research, it is learned that one or many plants are not adequately protected against fire, for example. Therefore, changes must be made in order to meet the minimum requirements of the existing regulations. This is not a "backfit", it is necessary to comply with the applicable rules which the licensee was thought to have met. The DOE proposal would bring even these uppgradings to a screeching halt.

Moreover, despite repeated requests, the industry has not come up with a single example of an unwarranted backfit. The licensees have the right now to claim a hearing to dispute any backfit and they surely have the resources to do so. If they have acceded to NRC's judgment, they should not be heard to complain now.

As Secretary Hodel's testimony indicated, the DOE backfit language calls for a "quantitative" assessment -- in other words, a probabilistic risk assessment (PRA).

This section would create a presumption against modifying current plants to incorporate new understanding of safety issues, which is the opposite of what the Kemeny Commission recommended and what should be the rule. Absent compelling reasons to the contrary, important safety improvements should be reflected in the current generation of reactors. After all, they, rather than the hypothetical future reactors, pose the real risk to the public.

This section would also require that backfits be justified on the basis of a quantitative probabilistic risk assessment, as Secretary Hodel testified. The fact is that these complex computer analyses, which are based on thousands of arbitrary and unverifiable assumptions, can be deliberately abused to reach the desired result. PRA's are all subject to overall uncertainties of such enormous magnitude that they do not provide a rational basis for decision-making. Instead, they provide the illusion of precision, and thus an excuse for decision-making, but not a sound, independent basis. Moreover, simply because of their great complexity and cost, they are totally inaccessible to the public.

These points have been made so many times by technical experts, including those from the Advisory Committee on Reactor Safeguards, that one can only conclude that DOE's willingness to rely on PRA as the most important factor in backfitting decisions is a deliberate attempt to simply prevent any more backfitting.

In September, 1982, ACRS members Myer Bender and Jeremiah J. Ray (current Chairman), wrote the following to the NRC Chairman:

> There is no way in which the currently proposed safety goal policy will serve any useful public safety purpose as long as its main assessment basis is PRA. It is very likely to distort the significance of important public safety matters, and it has already diverted the attention of knowledgeable personnel on the NRC Staff from important physical plant problems to studies of issues being analyzed on the basis of a vacuum of statistical data.
> ACRS Report on the Draft Action Plan for Implementing the Commission's Proposed Safety Goals for Nuclear Power Plants, Sept. 15, 1982, Additional Comments by Members Myer Bender and Jeremiah J. Ray, p. 3.

* * *

> The use of PRA for regulatory purposes is defensible if event sequences and related probabilities are well understood and the consequences to public welfare can be clearly defined. The PRA methodology now in use does not meet these conditions. Id. at 5.
>
> ...PRA studies as currently performed will remain inscrutable and will, at least for the next decade, be little more than a display of logical thought based on essentially arbitrary reliability assumptions. Id. at 6.
>
> The claims for PRA concerning its ability to assess public safety risk are little more than a sham that will

> hide the fact that the basis for safety will always depend upon the judgment of a few individuals.
> Id. at 7, emphasis added.

PRA is largely a sham and no licensing "reform" should adopt it explicitly or implicitly.

The requirement to "justify" the backfit considering the remaining life of the facility not only enshrines PRA (the required analysis is presumably based on the dubious assumption that the probability of an accident is less when the remaining plant life is shorter); it would also have the effect of adopting a lower standard of safety for the oldest plants, precisely those most in need of upgrading.

Section 29a(b)(3) would eliminate any right to judicial review of backfitting decisions. As if that were not enough, Section 29a(c) is worded so broadly as to quite possibly preclude judicial review of any license amendment and any action on a petition for an order to show cause under 10 CFR Section 2.206. There is no justification whatever for insulating these critical decisions from judicial review. Surely NRC is entitled to no more deference than that given any other federal agency.

Section 29a(f) would allow the backfit restrictions to be applied to information and testing requests. Thus, the NRC could not even ask the licensees to perform analyses of their plants without proving in advance (presumably via a quantitative assessment) that the information will substantially enhance safety. This notion is incredible.

In summary, the backfit provision is grossly over-reaching and cannot be explained except as a surrogate for eliminating backfitting altogether.

Single-step licensing: Section 185 of the DOE bill, in combination with the following section on hearings, would, at one stroke, eliminate most of the existing checks on the nuclear industry.

First, it would allow a combined construction permit/operating license — without a final design, it should be noted. UCS has long advocated a combined CP/OL with the crucial qualification that the design must be essentially complete so that the Commission knows exactly what it is approving. Without the requirement for final design, such a provision is a mockery.

Moreover, this section would allow operation to begin upon certification by the utility that it has constructed and will operate correctly. A bare "certification" is apparently sufficient; no information to support this claim must be provided. The public is given 30 days notice of the certification in order to provide written comments. Of course, without access to any underlying design or technical information, the public is effectively precluded from questioning the certification or providing meaningful comments. The Commission Staff is given 15 days after the comment period to advise the Commmission, which is then given 30 days to act. Failure by the Commission to act within a total of 44 days after receiving a Staff report allows the plant to go automatically into operation. The right to a hearing before the plant operates is abolished.

A nuclear power plant is a highly complex machine. There have been far too many instances recently where that machine was not built as the utilities represented (most prominently Zimmer, South Texas, Diablo Canyon). The DOE legislation would make it highly likely that such problems would go undetected until after an accident. It is necessary in the interests of safety that a meaningful review be undertaken -- with full public participation -- after a plant is built in order to ensure that it has been built according to its license and NRC rules. The right to a hearing at the operating license stage is even more necessary today than ever. If the CP/OL was based on a final design, the issues could be limited to those related to conformance with the license and NRC rules. If not, the current practice must be retained.

Section 185(d) would give State governments the authority to certify need for power, an essential part of the environmental impact analysis mandated by the National Environmental Policy Act. The only "benefit" of a nuclear plant to balance against its risks is that it provides needed power. While we agree that this matter is best left to the states, in order to effectively substitute for NRC's procedure the statute must require that the state's decision-making mechanism permit effective public participation and that it mandate full consideration of alternatives to the nuclear plant. Neither bill contains any such provision. The quality of NRC's decisions in this area over the years has been abysmal. NRC has routinely accepted grossly inaccurate utility forecasts, with the result that unneeded plants have been licensed. This is an issue on which public participation is necessary and valuable.

Section 185e would allow even safety-related construction to begin before a construction permit has been issued and before hearings have been held. This gaping loophole makes a mockery of the pretense that the purpose of the bill is to enhance public participation by providing it early in the process, before decisions are made. Billions of dollars could be spent, and irretrievable commitments made before the license is granted. Permission to begin construction would be granted "on the basis of the available information and review to date", whatever that may be, thus rewarding ignorance and providing a compelling disincentive for covering up or failing to investigate questions about the application.

Hybrid Hearings: The centerpiece of the rewritten section 189, in both versions, is its total elimination of the right to adjudicatory hearings and cross-examination at any stage of NRC licensing. The so-called "hybrid" hearing process which the bill would establish contains unquestionably the most outlandish and onerous threshold burdens on a party to an administrative proceeding which have ever been proposed in American law. When the NRC itself considered this proposal (and rejected it), its then General Counsel conceded that the provision would change the standard contained in the Administrative Procedure Act, that parties are entitled to such cross-examination as may be "necessary for a full and true disclosure of the facts." There is no justification for denying parties to NRC proceedings what all other parties to all other agency proceedings are minimally entitled to.

A party would be entitled to a written and oral "presentation". This presumably does not include the right to introduce evidence through witnesses, since proposed Section 189a3(c) allows "evidence" only after further hurdles are cleared. Before the oral presentation, the party would be required to present "all the facts and arguments" upon which he relies. After the oral presentation, the party would have to prove as a condition to obtaining any cross-examination that there are "genuine and substantial disputes of fact which can be resolved with sufficient accuracy only by introduction of evidence at a formal hearing" and that the decision is "likely to depend in whole or in part on the resolution of the dispute." This is clearly a decision on the merits. No cross-examination or sworn testimony would be allowed at all except at the express direction of the Commissioners themselves.

The Catch-22 here is that there would be no right to cross-examine the utility experts or NRC Staff prior to the presentation of "all the facts and arguments" or the oral presentation. Thus, the decision on the merits would be made without any questioning or even any sworn testimony by the utility or NRC witnesses. They are effectively insulated.

This provision flies in the face of NRC's longstanding precedents which acknowledge that cross-examination is a crucial right of Intervenors. This is true for two reasons. First, the Administrative Procedure Act places the burden of proof for all initial license applications before all federal agencies on the applicants. Therefore, the applicant for a nuclear license must come forward with a showing on the record sufficient to justify its application. The applicants evidence is then subject under the APA to such cross-examination as may be necessary for a full and true disclosure of the facts. Second, it is understood that, unlike other kinds of litigatioon, in NRC proceedings the applicants and NRC Staff are the only parties with practical access to the range of expensive experts whose opinions underlie any judgment on safety issues.

This bill would effectively reverse the burden of proof and would deny the public the right to cross-examine these experts. It should also be noted that in permitting no cross-examination under any circumstances on matters of expert opinion (even assuming all the hurdles could be met, the bill allows evidence and questioning only on disputes of "fact"), it totally excludes the area that may be most disputed. For example, while all parties can usually agree that a system is designed in a particular way, where they disagree is their judgment on whether that design provides sufficient safeguards. These are matters of expert opinion and experience.

If this provision were enacted into law, we would see the bizarre and wasteful spectacle of lawyers arguing endlessly over whether a disputed fact is "substantial", the level of "accuracy" with which it must be resolved, and how "likely" the decision is to depend upon its resolution, without ever hearing from the technical witnesses who might have something useful to say about the issue. It is presumably the industry's hoppe that the public would be forced to surrender from this costly battle before any evidence were actually taken. You can also be absolutely sure that this misguided provision would spawn floods of litigation. There is an underlying constitutional right to fundamental fairness which cannot be abrogated and, in contrast to technical areas, courts feel themselves fully competent to pass on whether a party has been denied fundamental fairness.

Indeed, it was precisely the spectre of endless, and quite possibly successful, litigation that caused NRC's Ad Hoc Committee on Review of Nuclear Reactor Licensing Reform Proposals, composed of utility lawyers and other (including one public interest lawyer) to recommend against a provision very similar to that proposed by DOE. One prominent utility lawyer stated:

> I do think that the hybrid hearing concept raises a whole new area of questions for judicial review. And that is, under what ciircumstances was cross-examination denied or not, and I have to tell you that judges feel very competent to get into that queestion.
>
> They may not want to look into whether ECCS will work, but when it comes to denials or grants of cross-examination -- particularly denials, that is what would be raised -- every judge in the country will feel very competent to look at whether that was fair...

Moreover, the same lawyer made the point that this is focussing "on the wrong animal." He continued:

> ...So you have another week or two of cross-examination. That is not what stretches things out, and the hearing issue doesn"t have a hell of a lot of merit. The cross-examination is not generally so terrible that you have to run from it.

Chairman Palladino testified before the House Subcommittee on Energy Conservation and Power on June 8, 1983, that the total time for hearings has been cut from 18 to 11 months. Considering the complexity of these cases, and the more than ten years for plant construction totally unrelated to hearings, this time period is far from excessive. Moreover, the operation of no plant has been delayed because of hearings in the past two years; despite the industry's claims to this committee in 1981, not a single plant has even applied for a temporary operating license.

There is another gravely objectionable section of this proposal (Section 189 a(5)(A)(B) which would forbid the introduction of evidence on issues considered in other proceedings, even those to which the person offering the evidence was not and could not have been a party, unless the intervenor has somehow already introduced "significant new information" constituting a "prima facie showing that action is needed to substantially enhance" safety "as a result of improved overall safety" which is "justified when considered over the remaining life of the facility."

Thus, a party is presented with a remarkable Catch-22. He can't present his evidence unless he already has presented evidence. In addition, the section incorporates all of the offensive element of the backfit standard, requiring a probabilistic risk assessment as a "prima facie" showing. Lastly, a party is effectively bound by the results of some other proceeding in which he may well have had no right to participate, since Intervenor status is only granted to those who live in the vicinity of the plant in question. Persons from California have no right to appear in a hearing considering a plant in Illinois. This section is an affront to the constitutional guarantee of due process.

The succeeding section, Section 189a(5)(c) governing license amendments, similarly prohibits information on issues considered in a design approval proceeding, "unless agreed to by the Applicant." The Applicant could put in the evidence favorable to its side of the question while unilaterally preventing either the public or NRC Staff from contradicting it. The mind boggles at this incredible provision.

Early Site Approval: In principle, we have no objection to early site approval. Indeed, NRC has had it on the books for many years. Not only is this section unnecessary, it would also modify NRC's current practice in several unacceptable ways.

First, a site approval would be "conclusive" for 10 years. Thus, even if an earthquake fault is discovered under the site, the question of site suitability could not be reopened.

Second, a holder of a site approval only could begin even safety-related construction of a nuclear plant without a construction permit, without meeting any articulated standards, without any particular review whatever, upon 30-days "notice" to the Commission, "unless otherwise ordered" by the Commission or State. Thus, a site approval is for all practical purposes a construction permit, although it will be granted before a plant design has been selected or a construction permit application filed! Moreover, a site approval does not require a certification of need for power, so construction can begin without that as well. This provision comes the closest to simply deregulating nuclear power as any in the DOE bill.

Design Pre-approval: Again, a provision for standardized design approval has existed for many years in the NRC rules and is, in principle, unobjectionable. This provisionn would make a determination "conclusive" for 10 years, no matter what information may later be discovered. It is extremely ill-advised to statutorily prohibit the correction of mistakes in this manner. Would this Committee have approved the construction of duplicates to TMI-2 after the accident? That would be a potential result of this provision.

At this point we must mention Section 198 of the DOE bill. This remarkable section would allow licensees at their own discretion and without notice to NRC to deviate from "any aspect of" their license or approval unless the licensee determines that the deviation involves a change in technical specifications or an unreviewed safety question. We can confidently predict that licensees will not be overly strict in interpreting these standards, since, as Saint Benedict observed 500 years ago, it is far easier to beg forgiveness than to ask permission. This provision would effectively nullify the restrictions in an operating license. We cannot believe that it would receive serious consideration.

CONCLUSION

S. David Freeman, a member of the Board of Directors of the Tennessee Valley Authority (TVA) — and hardly an anti-nuclear fanatic — recently proposed an answer to the question "What Would It Take To Make Nuclear Power Work?" in a speech to the American Association for the Advancement of Science. We have taken the liberty of attaching that speech to this testimony. Although we do not agree with every point he makes, Freeman's entire speech is worth reading, and we believe his central thesis must be considered by any policy-maker who is trying to grapple with this issue.

After concisely tracing the hasty development of the light water reactor and the de facto votes of "no confidence" in it by the marketplace and the investment community, Freeman suggests that, to survive, the nuclear industry must settle on a much safer reactor design concept.

We might quarrel with the way Freeman skims over certain relatively intractable problems -- waste disposal, weapons proliferation — that may accompany any nuclear reactor. And we seriously doubt that the federal investment of tens of billions of dollars in one or more such "experiments" makes fiscal sense when investments several orders of magnitude lower in energy efficiency research would yield far greater benefits over the rest of this century.

But Freeman's argument highlights the central, unstated premise of the legislation now before you. It only makes sense to "reform" nuclear licensing if one has such a high level of confidence in the safety of current plants and in the competence and vigilance of the NRC, that one believes that public participation is valueless. As the public opinion surveys cited earlier demonstrate, the American people do not have that high level of confidence in this technology. In our view, that lack of confidence is fully justified by the experience of the last quarter-century.

Before the Congress again puts its imprimatur on state of this technology — and that is exactly what it would be doing by passing either one of these bills -- it ought to pause and consider whether the hiatus the industry now faces should be the occasion for a fundamental reassessment of -- not the licensing process — but the technology itself. As Freeman acutely points out, "The truth is that the regulator only mirrors the technology." By its handling of this legislation, Congress should send the correct message to the nuclear industry: your problems are yours to solve. We will not paper them over with procedural changes. If the industry perceives, and acts on, that message, it will have reached a new level of maturity.

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Doing It Right In The Nuclear Business

Two Utilities Prove It's Still Possible To Build Nuclear Plants In Six To Seven Years

By Richard Myers

Among utilities building nuclear plants nowadays, the common experience seems to be ballooning costs, 10-12 year construction periods, spiced fairly frequently with gross errors in either construction [illegible]gement or design or [illegible]ty assurance or some other equally vital element (witness the South Texas Project, Zimmer, Diablo Canyon and WPPSS before Robert Ferguson arrived and whipped it into shape).

But this is not another story about the beleaguered multitude. It's about two companies which share the uncommon good fortune of bringing reactors into service with great dispatch. The first six reactors expected to receive operating licenses in 1983 averaged 10 years in construction. But St. Lucie 2, owned by Florida Power & Light, will start generating power in May, five years and eight months after construction started. And Arizona Public Service Co. will bring Palo Verde on line in December, seven years and three months after construction started. What did they do right?

"It's hard to tell you what we did right. I don't know what all those other people did wrong," says William Derrickson, Florida Power & Light's project general manager at St. Lucie 2, an 802-megawatt Combustion Engineering pressurized water reactor. "Are we just the way it should be, or are the others the average?" he wonders.

Unlike many utilities, which leave construction largely to the engineer-constructor, Florida Power & Light insisted on having its own man in charge at the site. At St. Lucie 2, "we have an integrated site organization with Ebasco, but the site manager is ours. We wanted to be in control," says Derrickson.

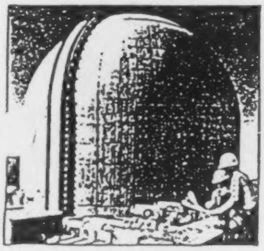
The utility conceived a novel approach to construction. "We brought our start-up people in very early, in 1979. And we sequenced construction according to start-up needs." As construction in some areas was finished, "the start-up team began checking equipment out, debugging. We started putting the plant in service in 1979. As construction was proceeding, so was start-up—all in an orderly fashion."

By dovetailing construction and start-up testing, "almost every piece of equipment has already been tested and checked out. Only the integrated systems testing remains." In Derrickson's experience, most utilities don't do things this way. "They are nervous about accepting any facility from the constructor until it is completely finished."

Unit 1 at the St. Lucie station, which entered service in 1976, was built in about the same time as Unit 2, also using Ebasco as architect-engineer-constructor. But FP&L did not dovetail construction and start-up with its first unit as it did with the second. Derrickson is confident that the technique enabled him to hold a 68-month construction schedule with Unit 2, in spite of the extra regulations and requirements which erupted from the Nuclear Regulatory Commission after the Three Mile Island accident. "By using these techniques, we were able to accommodate the increased regulatory burden," he says.

Because of Three Mile Island, FP&L had to alter its original design in a number of ways: the post-accident monitoring system was changed; the control board was rebuilt (to reflect the new emphasis on human factors engineering); automatic initiation of auxiliary feedwater was installed; a reactor vessel vent head was put in, among other items. But the back-fitting and retrofitting did not cost FP&L as dearly as it has some utilities, although there was a modest delay. "We should have been ready to load the core at the end of '82," says Derrickson. Things might have been even worse if not for "a very good planning and scheduling system. It makes things very visible," he adds.

Even the Nuclear Regulatory Commission, traditionally the bane of nuclear utilities, did not conspire against St. Lucie 2. Derrickson recalls only "one difficulty with NRC...in 1980, getting them to review our FSAR [Final Safety Analysis Report]." But the utility's top management quickly intervened; the FSAR was docketed in February of 1981, and ACRS hearings on it completed by November—nine months for a process that normally takes 18. Why was the NRC staff reluctant to



Containment dome at Palo Verde Unit 1: 243 feet tall, 154 feet in diameter, made of steel-reinforced concrete averaging 3½ feet thick, plus a 3/8-inch-thick carbon steel liner. It just passed its Integrated Leak Rate and Structural Integrity Tests.

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docket the FSAR for St. Lucie 2? "They didn't believe our schedule for the project. They didn't think we could get it online much before '85 or '86, and they had other work to do," says Derrickson.

Arizona Public Service (APS) first conceived the Palo Verde project—three identical 1,270-megawatt Combustion Engineering System 80 reactors coming on line between 1983 and '86—back in 1972. Tom Woods, APS executive vice president and the man in charge at Palo Verde, recalls that he was a trifle nervous about ordering the System 80 reactor back in the mid-1970s. It was a new design; there were none in service at the time; and, being a veteran of power generation, Woods would have preferred something proven in utility service. But "there were 14 of them ordered between about 1976 and 1978," he says, "and 11 of them were ahead of us," scheduled to enter service sooner. Today, six months from loading fuel and less than a year from commercial operation, Palo Verde Unit 1 will be the first System 80 in service.

It did not happen by accident. Like Florida Power & Light, Arizona Public Service took pains with project management. "We put no one on that project who was not relatively young, even at the top. There was an age cut-off of 50 years," says Woods—to assure continuity of management from start to finish. "We've kept the same high-level people involved throughout and Bechtel and Combustion Engineering had an incentive to keep their best people on the job." Although he will not say precisely how, Woods says that the contractors on the project "have a substantial financial stake in the success of our project. The Bechtel project engineer, assistant project engineer and project manager are the same ones that started back in '72. That's true of Combustion [Engineering] as well." And Palo Verde enjoys the "committed attention" of APS' top management: "we have three vice presidents on that job plus myself, an executive vice president."

Woods sounds very much the hands-on manager. "I personally read every corrective action report from QA. I read every piece of paper that goes to NRC." He spends "one or two days a week, at a minimum" at the site.

Woods is convinced that "management does have some control over a nuclear project." Asked about the regulatory burden, Woods says that "NRC and the regulatory side has not been a problem....I think it's a lame excuse that many executives use when they get into trouble. NRC basically has never held us up"—save for one five-day delay in processing the utility's PSAR (preliminary safety analysis report).

And the backfitting and redesign required as a result of Three Mile Island? "Not a major impact. We had anticipated and put many of those things in our design anyway," says Woods. "We made a conscious decision back in '72 when we started that we didn't know a thing about nuclear and that we would spare no resources to find out." APS, for example, invested $4-million-or-so in a full-scale simulator in 1974 and has been training operators on it well in advance of when they enter a real control room.

Like Florida Power & Light, Arizona Public Service has enjoyed an easy ride through the regulatory process. FP&L had no intervention on St. Lucie 2. And at Palo Verde's Atomic Safety and Licensing Board (ASLB) hearings, there was only one intervenor, who offered 27 issues for contention. The 27 issues were narrowed to one—the availability of water—in the ASLB hearing, and that was dismissed.

Late last year, after the ASLB hearings had finished, a group of local farmers asked the NRC to prevent operation of Palo Verde, fearing that salt drifting from the cooling towers might devastate their crops. Arizona Public Service settled on a compromise: Unit 1 may go on-line unimpeded, but the ASLB will reconsider the salt drift question before approving an operating license for Units 2 and 3. Woods is confident that "by operating Unit 1 for six to eight months before getting into hearings on Units 2 and 3," the utility will be able to prove that salt deposition is not a problem.

Despite the enviable speed with which Palo Verde moved through construction, Unit 1 was not quite as swift as planned. Construction started in June 1976 and "the first unit was supposed to come on line in '81. We lost a year and nine months," says Woods. The first unit is now 99 percent complete (last week the containment passed the Integrated Leak Rate Test and the Structural Integrity Test required by NRC). The entire three-unit project is 88 percent complete.

Neither St. Lucie 2 nor Palo Verde have been spared one ailment common to nuclear projects—cost escalation. St. Lucie 2 will be built for around $1.42 billion, roughly quadruple the utility's original estimate back in 1974. Arizona Public Service expects all three units at Palo Verde to come to $4.3 billion, compared to the 1974 estimate of $2.7 billion. "About half of the increase is owing to inflation," says APS' Tom Woods.

REMARKS BY S. DAVID FREEMAN, DIRECTOR, TENNESSEE VALLEY AUTHORITY

WHAT WOULD IT TAKE TO MAKE NUCLEAR POWER WORK?

Four years ago, the Three Mile Island accident vividly demonstrated that the existing nuclear reactor design is capable of self-destructing. The marketplace has been indicating what it thinks of the product ever since. Electric utilities have canceled two dozen reactors and deferred several dozen more. No new reactors have been ordered. And Wall Street has added its vote of "no confidence" by lowering the bond ratings of utilities with a heavy dependence on nuclear.

In most industries, this resounding marketplace setback would be enough to provoke a search for a better product. The nuclear power industry, on the other hand, has made only minor "product changes" in response to the bad news from the marketplace. It has merely added the numerous "Band-Aids" that the NRC keeps requiring as lessons are learned from TMI and other malfunctions.

The nuclear industry apparently believes the public is simply badly informed. This summer, the industry is embarking on a major campaign to convince the American public that TMI was little more than a bad dream. This $30 million advertising and public relations effort in my view reflects an escape from reality. The problems with the existing designs are very real and better "P.R." won't make them go away. What is required to make nuclear an economic and low-risk option for the future is a much better nuclear product.

The prevailing nuclear design cannot be considered a failure. Existing light-water plants, built at a total cost of more than $40 billion, are by and large generating economical electricity. But it now appears the original design did not take sufficient account of the potential dangers of nuclear energy. And the backfitting changes required to make these plants safe enough are also making future plants of the same design uneconomic.

Those "Nobody Died At TMI" bumper sickers now seem especially ironic, because the most notable casualty of TMI will be the nuclear industry, if it doesn't improve its product. Backfitting existing plants as well as those under construction has proved so expensive, and the costs so open-ended, that many utilities have concluded that for the future nuclear simply isn't worth the expense or the trouble.

Moreover, the industry faces the possibility of safety-related shutdowns at additional reactors under construction or in operation. Major construction problems have been discovered at plants in California, Texas and Ohio, and serious operational deficiencies have turned up in New York, Florida and New Jersey.

In light of this trend, some observers have been led to forecast the imminent demise of the nuclear option. This would be unfortunate, for the nation needs a better alternative than more imported oil or air-polluting coal.

The CO_2 buildup, for example, is inherent in burning fossil fuels. I hope that solar energy will some day be an economic source of power throughout the planet, but that option is not likely to be a practical alternative in the near future for nations that badly need an alternative to imported or polluting fossil fuels. The challenge before us is to learn from our mistakes, go back to the drawing board, and come up with a better reactor design, one that is both cost-competitive and inherently safer than today's design.

Unfortunately, the so-called "oil glut" and huge federal deficits have resulted in cutting back on federal investments in energy self-sufficiency. This is ironic in view of sharply increased spending for defense, since the threat to our national security from dependence on imported oil has not changed in any fundamental way. As the world recovers from the recession, imports will increase, and so will the threat to our national security. And of course the threat to the health and safety of the people and our life-sustaining natural resources from today's use of coal and nuclear power continues unabated.

In the current political environment, there are unlikely to be any federal initiatives to invest in new and better sources of energy without a major commitment of effort and resources from the private sector. Yet there has been no push from the industry to get on with the job of develop a better nuclear product.

This time of a market-enforced moratorium on new orders should be used for a fundamental re-examination rather than simply applying more Band-Aids on the existing designs. But industry spokesmen prefer to blame nuclear's problems on regulatory intrusions. This meshes well with the view that most business failures are due to government interference, but it conceals an unwillingness to face the facts. The industry's ostrich-like attitude is ultimately more threatening to its future than is regulation.

The truth is that the regulator only mirrors the technology. The nuclear industry will lose its credibility altogether if it persists in trying to blame the messenger. Indeed, a tough-minded, credible regulator is essential to restoring public confidence in nuclear power.

The extent of NRC regulations reflects the extent of the light-water reactor's deficiencies. The doubling and tripling of construction times for new plants indicates the chaotic state of nuclear plant design as the industry scrambles to make needed safety improvements. And lower bond ratings for nuclear utilities represent the considered judgment of the financial community about the risks of the light-water option—risks not so much for the public as for the economic future of the utilities themselves.

The recent Supreme Court decision affirming the right of states to veto construction of reactors on economic grounds provides ample warning that neither the federal government nor the electric utilities are going to be able to get the light-water reactor industry going again simply by executive fiat.

It is time to confess that we went too far too fast in deploying a reactor type we knew too little about. It's also fairly clear that we moved too quickly to capture perceived economies of scale. Utility executives were ordering reactors in the 800 MW to 1300 MW range at a time when their only operating experience was with 180 MW reactors.

This basic lack of familiarity has led to continuing design changes to reflect the experience gained while the larger plants were under construction. And the cycle has become virtually endless as more changes have stretched out construction timetables and experience has taught us that even more changes are required. In this sense, none of the nuclear plants has yet been completed. For example, at TVA we have hundreds of people still at work at the Browns Ferry Nuclear Plant making changes in a plant that went commercial a decade ago.

At present, the 76 operating reactors in this country are licensed by some 40 utilities. When all pending nuclear construction is completed, we'll have some 130 reactors in the hands of about 60 utilities. These reactors differ from each other in subtle but significant ways due to a variety of different designs. The diversity of ownership, coupled with the absence of standard design, creates industry confusion that requires ad hoc regulatory treatment and materially increases fundamental safety risk.

I am not suggesting that there is any imminent safety threat to the public. With all the backfitting changes and improvements in operations since TMI, it appears that competent organizations can operate the light-water plants at a low risk of harm to the public health and safety. But the projected life-cycle cost of electricity from the plants still under construction has risen to the point that the economic viability of those that are not close to completion appears doubtful.

This discussion all leads back to one central question: Is there an inherently better technical option than the apparently "unforgiving" reactor design we have today?

Concerns about the light-water reactors have focused on the loss of coolant accident and the fear of a melt-down. But there are other problems with the light-water technology due to neutron bombardment, corrosion, and valve difficulties, all compounded by the high heat factor involved in light-water reactions. The equipment and devices we use to achieve high temperatures and high pressures in LWR's have required continuous backfitting, which has been both time-consuming and costly.

The lessons we have learned thus far could be incorporated into a new light-water reactor design. With standardization, cost could be stabilized. But I fear that experience will continue to reveal the need for additional changes. And these designs will always be heavily dependent on the skill of operators and the proper functioning of mechanical equipment.

Alternative reactor concepts exist, and it's important that we take a close look at them. One particularly intriguing modification of the basic light-water design is the Swedish reactor concept known as PIUS (for Process Inherent Ultimate Safety). Under this concept, all reactor components and piping are contained within a single large pre-stressed concrete vessel. Emergency cooling is provided by natural circulation of water within the vessel.

This "passive" approach eliminates the need for conventional electrical and mechanical "active" safety systems. In the event of an accident, it can provide cooling for about one week without external emergency cooling systems, without the use of electricity, and without operator intervention.

So far, the design is only a concept, but the concept includes many of the features that should be included in the next generation of nuclear reactors. A plant based on the PIUS design should be able to tolerate operator error and multiple failures of almost all the active systems without danger to the public. The designers claim that such a plant would not be susceptible to a meltdown, and American experts can find no basis on which to disagree.

Another alternative that deserves further investigation is the High Temperature Gas Cooled Reactor (HTGR). The HTGR may offer several inherent advantages over LWR's that would make it a desirable option for both electricity and process heat.

The gas cooled, graphite moderated reactor has safety advantages during a loss of coolant accident (LOCA) because of the large thermal capacity of the graphite and the use of prestressed concrete reactor vessels—a feature made possible by the noncondensible gaseous coolant, helium. These characteristics give operators more time to respond to a LOCA before the onset of core damage.

An HTGR would also make maintenance easier and less expensive, with lower occupational radiation exposure. Helium gas coolant has fewer impurities tan water to become radioactive and creates no products. In addition, the higher coolant output temperature makes possible higher thermal efficiencies for steam electricity production.

Of course, there are drawbacks. Helium is expensive and allowable leakage must be very small. Water must also be kept out of the system since the hot graphite will oxidize on the surface if moisture is present in the helium. But these drawbacks can be overcome, and are relatively minor compared to the demonstrated inadequacies of the light-water reactor design.

The real difficulty with the HTGR is that it is virtually untested. The Fort St. Vrain Plant in Colorado is the only operating HTGR in the country. Gas-cooled technology has clearly gotten short shift to date due to the overwhelming predominance of LWR's.

The Canada Deuterium Uranium (CANDU) reactor also deserves renewed consideration as a successor to the light-water design. This type of reactor uses heavy water (deuterium oxide) to slow down the neutrons that sustain a nuclear chain reaction. This makes it possible for the CANDU to use naturally occurring uranium fuel, avoiding the costly and energy intensive process of enrichment that is necessary with LWR's. Therefore, the cost of fueling a CANDU reactor is much lower than for any other type of commercial reactor.

Based on good operating experience with the CANDU design, Canada's Ontario Hydro has expanded its sytem by adding plants of the same design. They have understood the benefits of standardization and are succeeding in capturing them. At the same time, the American nuclear industry is spending most to its own energy patching the patches on the light-water design.

Of course, we do not yet know which, if any, of these designs will prove most satisfactory as a replacement for the light-water reactor. It could be that other long-neglected options such as the molten-salt concept could emerge as superior. Much comparative research is still required to determine which is the safest, the most efficient, and the most cost-effective. But that research is unlikely to take place until there is a national consensus that the current generation of nuclear plants poses unacceptable costs to the public and risks to the electric utility industry.

Developing that consensus has become crucial to the future of the nuclear option. In a period in which energy has taken a back seat to other policy concerns, it is important for the leaders of the scientific community, who will play a major role in determining the future of the nuclear option, to speak out on behalf of the interests of the nation as a whole. In my view, the national interest does not lie in stonewalling the real concerns about the current nuclear product nor does it lie in just letting it die. The national interest is in trying to find better ways to harness the vast undeveloped potential of nuclear energy, which could play a valuable role in our energy economy for several hundred years.

We should still be experimenting, still developing a very complex technology whose dangers and ultimate benefits are only beginning to be recognized. The nation must be open to the potential of different systems and new technical advances as well as the possibility that none of the options will prove satisfactory. We must begin again, and we must be bold enough to consider a radical departure from current nuclear designs that are so unforgiving of human and mechanical errors. If we don't we may never know whether it was good or bad that the nuclear power option has come to a premature end.

TESTIMONY OF THOMAS M. DEVINE AND LYNNE BERNABEI ON BEHALF OF THE GOVERNMENT ACCOUNTABILITY PROJECT OF THE INSTITUTE OF POLICY STUDIES

Mr. Chairman and members of the subcommittee:

I. Introduction

Thank you for inviting the testimony of the Government Accountability Project (GAP) of the Institute for Policy Studies on S.893 and S.894, proposals from the Nuclear Regulatory Commission (NRC) and the administration, respectively. My name is Thomas Devine. I serve as GAP's Legal Director. With me is Lynne Bernabei, GAP's General Counsel. These bills each attempt to reform the process to license nuclear power plants by streamlining it. Unfortunately, each bill is counterproductive, if "reform" is synonomous with enhancing public assurance that nuclear power plants will not be licensed until all significant safety issues are identified and properly resolved.

GAP does not endorse or oppose specific legislation. We are grateful, however, for this opportunity to analyze the effects of these proposals. To a varying degree, each bill exacerbates two structural flaws which already compromise the legitimacy of the NRC—(1) inadequate public participation in oversight of nuclear safety; and (2) the absence of an independent system of internal agency checks and balances on the quality of NRC staff investigations and inspections. As a result, these proposals could significantly increase the risk that construction defects will go undetected and further erode public confidence in nuclear power. Ironically, the bills may even lead to longer, more costly delays by postponing the opportunity for public input until the initial construction cycle is nearly complete. By that point, violations and defects which could have been identified and corrected early will have accumulated, maximizing the scope of necessary repairs.

We base these conclusions on the lessons our organization has learned over the last three years, during which we have monitored the NRC's oversight of quality assurance (QA) programs on behalf of the citizen organizations and nuclear industry whistleblowers for whom GAP has served as counsel. The Government Accountability Project is a project of the Institute for Policy Studies, Washington, D.C. The purpose of its program is to broaden the understanding of the vital role of public and private employees in preventing waste and corruption, to offer legal and strategic counsel to whistleblowers, to provide a unique legal education for law students, to bring meaningful and significant reform to the government workplace, and to expose government actions that are repressive, wasteful, or illegal, or that pose a threat to the health and safety of the American public.

Presently the Project provides a program of multi-level assistance for government and corporate employees who report illegal, wasteful or improper actions by their agencies, GAP regularly monitors governmental reforms, offers expertise to Executive Branch offices and agencies, and responds to requests by Congress and state legislatures for analysis of legislation to make government more accountable to the public.

Since 1980 GAP has represented twelve whistleblowers and three citizen intervenors, provided informal assistance to numerous organizations, and interviewed over 100 employee witnesses to faulty construction practices at six nuclear power plants. We have been particularly active at the Zimmer and Midland nuclear stations, near Cincinnati, Ohio, and in Midland, Michigan, respectively. At each plant we have represented whistleblowers and citizen intervenors in virtually the entirety of formal and informal forums provided by the NRC staff, Commissioners, and the Atomic Safety and Licensing Board (ASLB). Our experiences at these two plants are summarized below as case studies to illustrate the benefits of public input which S. 893 and S. 894 inherently sacrifice to different degrees.

II. Generic analysis of S. 893 and S. 894

Any comparison of the two bills with the current licensing process must start with an acknowledgement of the serious flaws in the status quo. Construction and licensing hearings currently are not effective because of the vast disparity in resources and technical expertise between the intervenors and the utilities owning the plants. Only with sufficient and assured resources can intervenors effectively litigate the often complex issues raised in these hearings. The proposed legislation aggravates this problem by transforming the already-tremendous burden carried by intervenors into an almost unbearable one.

Moreover, whether formal adjudicatory hearings are the *most* effective means to resolvé health, safety and environmental issues seems more a philosophical than a practical problem, certainly adjudicatory hearings at the present time are the best means available to examine disputed issues of fact within a framework which protects parties' rights to present evidence, cross-examine witnesses and make legal arguments.

GAP's particular concerns with the proposals involve two common themes—restricting the opportunity for public hearings and eliminating the guarantee for adjudicatory proceedings.

The NRC bill largely substitutes Commission "findings" for public hearings, which will only be available at the beginning and during the tail end of the construction process. The administration bill goes a step further, largely substituting utility certification of legal compliance for hearings on NRC findings. Under the administration's approach, the public would lose its right to petiton the NRC for enforcement action; the NRC staff would gain a monopoly on quality assurance reviews; and the public's right to legal challenge would be shrunk to a 14-day period after the plant is completed. When hearings do occur, the NRC proposal contains discretion to restrict cross-examination through "hybrid" hearings—a format which is required by the administration bill.

The effect of these policies could be to create a bureaucratic gauntlet that threatens effective public participation in safety oversight of nuclear power plant construction. More specifically, the bill will—

(1) Substantially shrink opportunities for the public to raise significant safety issues. As Commissioner Asselstine pointed out at October 1, 1982, congressional hearings,

> There really aren't meaningful opportunities outside of that licensing proceeding for the public to directly participate in our process. Sure, they can send us petitions, they can call us on the phone. They can send us letters saying that there are problems out there but there is a very limited opportunity beyond that point for their direct participation and involvement to directly raise issues and for them to have those issues directly addressed and resolved in a process that they can participate in.
>
> It is a far different matter to send in a petition to the Commission and have the NRC staff review it and have the Commission reach a final judgment on it and from time to time discuss with those people what our resolution of it is than it is to provide a direct opportunity for them to raise issues and to be able to pursue those issues in a hearing format and to be able to directly cross-examine witnesses from the opposing party and present direct evidence on their behalf and have that evidence judged by an independent trier of fact who sits there and observes the procedures.

At the same hearings, House Energy Conservation and Power Subcommittee Chairman Ottinger added,

> The best staff work in the world sometimes can't substitute for having a sworn witness on the stand and putting him through the paces . . . [Y]our staff doesn't have the facility to do [that] absent some kind of formal proceeding.

(2) Significantly decrease the public's ability to serve as a check on the adequacy of NRC fact-finding. Both proposals assume that the NRC staff is capable of identifying all significant violations and safety threats that the utilities miss. Unfortunately, this assumption is native at best. The quality of the NRC's own fact-finding investigations and inspections is drastically uneven. The QA breakdown in the NRC's own investigative program will be examined at House Interior Oversight and Investigations Subcommittee hearings this Monday, June 20. Further, because there is no statutory Inspector General at the NRC, public hearings are the only independent check on the effects of breakdowns in the quality of NRC investigations.

(3) Significantly reduce the public's ability to challenge questionable policy judgments by NRC staff management. Even when the NRC staff inspectors and investigators fully report the problems, public hearings are necessary as a check on the basis and wisdom of suspect NRC staff management policies. At both Zimmer and Midland, the public has been better served by NRC investigators and inspectors in some cases than by the agency management. Adjudicatory licensing hearings offer a chance for public accountability of management policies. In addition to improving the quality of decision-making, these proceedings enhance public confidence that health and safety decisions are not the result of secret NRC-utility collusion.

III. Case studies of public contributions to the quality of licensing decisions

GAP's in-depth work with whistleblowers and conscientious citizen organizations at Zimmer and Midland illustrates how the three flaws described generically above could translate into public health and safety threats at nuclear "lemons" already compromised by quality assurance breakdowns.

A. Issues raised by the public

The Zimmer nuclear power station has now been recognized as "a story of how not to build a nuclear power plant," in the words of House Interior Chairman

Morris Udall. Commissioner Gilinsky assessed that "from a quality assurance standpoint, this is the worst plant I've ever seen." He added last October that it will take years now just to identify all the problems.

Amazingly, the NRC staff failed to report this state of affairs through the first 97 percent on construction. It took the public to expose the problems at Zimmer. As Commissioner Asselstine, the NRC staff, the Environmental Advisory Council, and various congressional leaders have recognized, whistleblowers speaking through MVPP and its counsel GAP identified the defects at Zimmer when all other official channels had failed. MVPP's allegations played a significant role in the events leading to the November 12 Order. At February 22, 1983, oversight hearings, chairman Udall put the public's contribution in perspective:

The plant reached 97 percent completion without the staff, or the ACRS or the Licensing Board recognizing that in significant respects it could not be determined whether the plant complied with the Commission's regulations. Had it not been for whistleblowers and outside organizations, Zimmer might now be operating. Through some 300 allegations, 3,000 pages of documentation, and 15 statements or affidavits from Zimmer whistleblowers, MVPP raised the following issues as proposed contentions in an attempt to reopen licensing hearing before the Atomic Safety and Licensing Board: (1) Applicants have failed to ensure that the as-built condition of the plant reflects the final version of an acceptable design; (2) Applicants have failed to maintain adequate material traceability to identify and document the history of all material, parts, components and welds; (3) Applicants have failed to maintain an adequate QA program for vendor purchases; (4) Applicants have failed to maintain as adequate quality assurance program to identify and correct construction deficiencies, in terms of organizational structure and premises; (5) Applicants have failed to maintain adequate controls to process and respond to internal Nonconformance Reports (NR's); (6) Applicants have continued illegal retaliation against QA/QC personnel who diligently attempted to perform their duties or disclose problems to the NRC; (7) Applicants have failed through the Quality Confirmation Program to address or assure adequate corrective action for the full extent of the QA breakdown; and (8) Applicants have failed to maintain the necessary character and competence to operate a nuclear power plant.

Unfortunately, the lesson of Zimmer is more than the value of public input. The case also illustrates the unreasonable barriers that already exist to public participation. Although MVPP first raised these issues in May 1982, a hearing has not yet occurred. Although the ASLB admitted the contentions, last July 30 the Commission dismissed the issues and cancelled the hearing. On June 3, 1983, MVPP tried again with an expanded, modified version of the contentions. It is ironic that licensing "reform" would shrink public access even further.

B. Weaknesses in NRC fact-finding efforts

Clearly, the NRC investigative program at Zimmer failed, or the public would not have had to plug the factual holes in the record. Over the previous three years, GAP has identified the following breakdowns in the quality of NRC staff oversight of QA at Zimmer:

(1) failure to respond to evidence of a massive QA breakdown for years despite prior knowledge, until prodded into action by an embarrassing public whistleblowing disclosure in December 1980;

(2) failure to suspend construction in the spring of 1981, despite contrary staff recommendations and a public petition;

(3) turning over increased authority for quality assurance to the utility in April 1981, despite NCR knowledge of the utility's responsibility for or complicity in the previous violations;

(4) suspending a criminal investigation in the summer of 1981, just as it was determining that the root causes of the QA breakdown rested with top CG & E management;

(5) censorship of the highly-touted November 1981 NCR reports, so that the most serious abuses would not be revealed;

(6) attempts to cover up this censorship illegally under the Freedom of Information Act by responding to requests with official denials that records existed, while privately the staff was ordered to destroy or remove the same records;

(7) advance warning to the utility before hardware inspections;

(8) misplaced reliance on utility records to minimize the scope of the welding recertification program;

(9) lax oversight of the welder recertification test program;

(10) inability to keep up with the pace of allegations, resulting in a large backlog on significant issues such as welding procedures and vendor QA;

(11) continued unwillingness to work with whistleblowers and other non-management personnel in conducting investigations; and

(12) failure to monitor CG&E's QCP program with more than spot checks except for one task.

In an October 8, 1981, memorandum commenting on a particular Zimmer investigation, NRC Office of Inspector and Auditor (OIA) Director James Cummings observed,

> Clearly, IE Investigation 50-358/80-9 did not satisfy the above NRC standards or generally accepted investigative standards of other Government agencies. It should clearly be understood that OIA did not evaluate IE's investigation based on FBI or other criminal law enforcement investigative procedures and/or standards. Fundamentals basic to all investigations were simply not observed in this instance. The investigative file contained no results of interviews at all nor was there any detailed record of copies of the documentation reviewed.

Unfortunately, the NRC's internal QA breakdown at Zimmer may not be an anomaly. On August 7, 1981, Mr. Cummings promised to find the answer when the Zimmer OIA report was first issued:

> No specific corrective recommendations are being made by OIA at this time because we are hesitant to conclude that the overall IE investigative program is deficient based on this instance. A more extensive review of the IE investigative program is planned for the near future, after which we will determine if corrective recommendations are warranted.

It is even more unfortunate that OIA did not have the structural independence to carry out this commitment. At most agencies, an Independent Office of Inspector General has control of its own oversight agenda. At the NRC, however, OIA reports directly to the Commissioners, who then permitted the NRC staff to evaluate—and exonerate—itself for missing so many QA violations over the years.

Because of the lack of agency checks and balances, the public may be the only meaningful institutional safeguard on the effects of inadequate NRC staff oversight of quality assurance during nuclear plant construction. As seen above, public input has led to exposure of significant safety hazards that otherwise may have been missed. By minimizing the chances that the public could succeed again, these proposals institutionalize decreased accountability.

C. Need to challenge questionable NRC practices

In the Midland proceedings Ms. Bernabei represents Citizen Intervenor Barbara Stamaris in the ongoing licensing proceedings over the soils settlement issues. These hearings were requested by the Applicant, Consumers Power Company, as a means of circumventing an NRC order to modify the construction permit when major soils problems were discovered at the Midland site. Although these hearings were requested by the applicant in order to continue construction of the twin power plants, ironically they have proved to be the most revealing about the scope and seriousness of the Midland problems.

As far back as the hearings on the Construction Permit, the Atomic Safety and Licensing Appeals Board recognized the breakdown in Consumers Power Company's ability to implement a successful Quality Assurance plan. In fact, the original Midland licensing appeal panel members felt so strongly about the QA violations discovered in a November 1973 IE inspection that Mr. L. Manning Muntzing, then Director of Regulations, wrote a prophetic letter. He pointed out that even though the Appeals Board could not take action on the IE findings, . . . the members of the Midlands Appeals Board feel constrained to record (1) their extreme dismay respecting this latest development; and (2) their firm belief that more drastic action against Consumers Board and its architect-engineer should be promptly considered. In this connection, had the construction permit proceeding still been before our Board at the time that the results of the November 6–8 inspection were announced, it is a virtual certainty that we would have ordered forthwith a cessation of all construction activities . . . (November 26, 1973 Letter from L. Manning Muntzing, Director of Regulations, re: Quality Assurance Deficiencies Encountered at Midland Facility, p. 2.) Mr. Muntzing's warning in 1973 should have served as notice to both Bechtel and Consumers Power to resolve their QA problems. Unfortunately, they ignored the notice. So did the NRC staff! The QA problems at Midland continued unabated.

To a large degree, recognition of the QA breakdown at Midland in the fall of 1982 and the serious steps which Consumers Power Company must take to ensure an adequate QA program came only through years of intervenor effort to illustrate the soils and QA issues. More recently the intelligent, dedicated and hardworking inspection staff at Midland have aggressively pursued investigation of these problems toward their resolution. That letter continued to describe Consumer Power's past conduct as a "pattern of repeated, flagrant and significant QA violations of a nonroutine character—coupled with an unredeemed promise of reformation."

In the intervening years the QA and hardware problems at Midland have accumulated, not receded. In a November 19, 1982, Report to the Advisory Committee on Reactor Safeguards, Thomas M. Novak, Assistant Director for Licensing, outlined significant construction problems identified in the last ten years. They include, but are not limited to:

(1) 1973—cadweld splicing deficiencies requiring the suspension of splicing activities;

(2) 1976—rebar omissions and placement errors;

(3) 1977—a bulge in the Unit 2 containment liner plate and misplacement or omission of tendon sheathings;

(4) 1978—unexpected settlement and cracking of the diesel generator building;

(5) 1980—quality assurance problems at the Zack Company, the heating, ventilation and the air-conditioning contractor for Midland;

(6) Reactor pressure vessel anchor stud failures;

(7) 1981—piping suspension system installation deficiencies;

(8) 1982—electrical cable misinstallation.

Beginning in 1978 Region III investigated the excessive settlement of the Diesel Generator Building, and found it was caused in part by inadequate compaction of foundation materials and unqualified field engineers. Not satisfied with Consumer Power Company's work, construction permits were ordered modified pending amendment until the staff was satisfied with Consumer's proposed plan for the remedial soils work. But the order never went into effect, because Consumers Power asked for a hearing on this order and since that time hearings have continued while critical soils remedial work has proceeded.

Until March of 1983, Region III's position has been—except for a period in December 1979—that there is "reasonable assurance" the Midland plant can be constructed with due regard for public health and safety. Yet over the last ten years there has been no demonstrable improvement in the QA performance of Comsumers Power or the Bechtel Corporation, its chief contractor. In fact, their performance has deteriorated to the point that in late November, 1982, the NRC staff pressured Consumers to shut down all safety-related construction at the site in light of an inspection of the Diesel Generator Building which revealed a significant quality assurance breakdown. More recently, Dr. Ross Landsman, the NRC inspector and soils engineer chiefly responsible for overseeing the adequacy of the remedial soils work, commented that he has lost faith that Consumers Power Company can pull off the complex underpinning of the buildings on site. He also has testified that the resolution of the DGB settlement is inadequate.

The current QA and soils problems at Midland would never have come to public attention prior to Midland's operation without the constant pressure from intervenors and public interest groups to examine the unprecedented problems on the site and determine their root cause, or without the efforts of nuclear employees who brought forward examples of poor quality work at the site.

It is of little comfort to the community around the Midland plants that Mr. Keppler has given his reasonable assurance in 1981 and again one year later in 1982, despite a record of deteriorating performance and statements by his staff that Consumers Power Company cannot be trusted. It is of even less comfort that in early December, 1982, after findings of a QA breakdown at the plants, Mr. Keppler released the critical underpinning work and has steadfastly stood behind the proposal that Consumers Power Company control the program to check the quality of the as-built condition of the plants. That has always been Region III's bottom line despite Consumer Power Company's performance and the ineffectivenes of the NRC effort.

Only through an open and effective licensing process can the Midland community hold Consumer Power Company and the NRC staff accountable for their promises. Yet if the proposed administration or NRC licensing process had been in effect during the last ten years it is doubtful the problems currently the focus of intense NRC and public attention would have come to light prior to Midland's operation.

The Zimmer and Midland case studies illustrate why public participation through access to the ASLB is necessary throughout the construction cycle. Quality assurance violations inherently cannot be litigated at the beginning of the construction process. The QA violations and shoddy workmanship have not yet occurred. Even allowing issues to be raised after construction is completed would be counterproductive, at best. QA litigation at that stage would be subject to severe pressures. The delays, scope and financial cost of corrective action will be maximized if intervenors cannot challenge a poorly-constructed plant until it has been completed.

IV. Conclusion

S. 893 and S. 894 must be considered in context. These bills renege on the commitments inherent in one of the basic tradeoffs in the Atomic Energy Act—meaningful public participation of safety oversight in exchange for reduced utility economic liability under the Price Anderson Act in the event of an accident. Instead, the bills would shrink public participation while leaving utilities off the hook financially for the consequences of illegally-constructed nuclear lemons.

This initiative comes at a particularly inappropriate time. The credibility of the NRC's own oversight of nuclear quality assurance is at an all-time low. Only through increased public scrutiny of the NRC and the utilities constructing and operating nuclear power plants will public confidence in their safety be restored. Equally significant, full public participation throughout the construction cycle will maximize both efficient regulation and nuclear safety.

Jesse L. Riley
854 Henley Place
Charlotte, North Carolina 28207

JUN 27 1983

June 24, 1983

Senator Alan K. Simpson, Chairman
Subcommittee on Nuclear Regulation
Senate Committee on Environment and Public Works
Washington, D.C. 20510

Dear Senator Simpson:

It was a peasurable as well as a memorable experience testifying before your committee on June 16. I particularly appreciated your invitation further to communicate.

Judging by the polarization of views in regard to the use of nuclear fission in generating eledtricity, such generation will either prove beneficial or detrimental to society. The underlying premise of both the NRC and the DOE is that the result will prove beneficial, that safety will be effectively regulated, that there will be neither near term nor long term adverse consequences. If this premise is correct, it makes sense to have a simpler, speedier licensing process before a board which intends to license plants but seeks to assure the plant will operate safely. If this premise is incorrect it means we will continue on a course which will augment an already present hazard.

If the licensing of plants is passed on by an independent and impartial adjudicatory body the industry may be slowed, but not stopped, if the adjudicators decide that the operation is safe. On the other hand, if the evidence, objectively weighed, indicates that nuclear generation is a mistake, an unbiased panel will not be constrained in arriving at this decision, it will not be bound by an initial set of assumptions.

I did not receive your letter of June 10 in time to respond to the Subcommittee's questions. I trust the following response is not untimely.

1. (a) Based on participation in four interventions I view the existing process as providing predictable, stable regulation. The utility, which is already in accord with the NRC staff, and the Staff will prevail. If the utlity urgently seeks an operating license by a certain date, as in the McGuire operating license reopened, the Atomic Safety and Licensing Board will oblige. Docket 50-369, 50-370.

(b) There is, in my experience, opportunity for public participation.. In each instance those opposed to licensing were a majority. In only one decision was reference made to the public participation. The decision denied the license for spent fuel transportation. The decision was reversed by the Appeal Board. Docket 70-2623.

(c) Over aneleven year period I have observed no change in the quality of decisions. The same meticulous legal craftsmanship has gone into finding support for the testimony of utility and staff and into discounting any other views entering the record.

(d) Health, safety, and environmental issues have been resolved with what has seemed to me reasonable efficiency. Usually opposed views have been heard. In the reopened McGuire proceeding there was, in my opinion, a departure from due process which resulted in the total exclusion from the record of views questioning the proposed fix for the vulnerability of the low pressure containment to a hydrogen explosion. Docket 50-369 OL, 50-370 OL.

In summary past licensing proceedings have accomplished the same objectives as sought in the legislation under consideration. The proposed legislation would accomplish these ends more rapidly and at lower cost to the agency and the utility. Timeliness is not really a question. I know of no nuclear plant operation delayed by a licensing proceeding. The chief difference the proposed legislation will make is a more obvious deprivation of opposed members of the public of due process.

2. The only "improvement" that I foresee is time and cost reduction. The public will be less able to "interfere with" or "delay" the process. The quality of the decisions is not likely to improve; the boards will not receive as much of a challenge--nor will the staff. In McGuire OL reopened the staff quickly worked through an insulation flammability problem raised by intervenor and initially overlooked.

3. It seems clear to me that all the changes sought could be accomplished by administrative action. The present adjudicatory structure has been devised entirely by administrative action.

(a) I would strongly support legislative changes if, in my opinion, the legislation were appropriate. The consequences of licensing decisions are of such magnitude in terms of public health and safety, and the economy, that the Congress should undertake responsibility for the mechanics and administration of the adjudicatory process. In the present instance I urge that these agency proposals be rejected out of hand for what they are, attempts to legitimize agency actions which clearly fail to meet customary standards for due process.

(b) If the NRC and DOE were not top heavy with pronuclear tilt there would be little need for changes. On the face of it the process is fair. It is in the according of weight in reaching decisions that the defect lies. Agency bias dominates agency action.

(c) It is in execution that the faults lie. In an agency free from pro-industry bias the present process would be acceptable.

The only rationale that I can see for legislating reforms is the correction of agency defects. The agency undoubtedly regards its pronuclear bias a virtue rather than a fault. With 61% of the public opposed to the construction of more nuclear plants there is a clear mandate for reforming the agency. But it is in the direction of less discretion to abuse, not more.

I appreciate this opportunity further to express my views. I respectfully request that they be shared with other members of the Subcommittee.

Sincerely,

June L. Riley

NUCLEAR LICENSING AND REGULATORY REFORM

THURSDAY, JULY 14, 1983

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON NUCLEAR REGULATION,
Washington, D.C.

The subcommittee met at 10:15 a.m., in room SD-406, Hon. Alan K. Simpson (chairman of the subcommittee) presiding.

Present: Senators Simpson and Mitchell.

OPENING STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM THE STATE OF WYOMING

Senator SIMPSON. Good morning. We meet again to continue our consideration of nuclear licensing and regulatory reform. We began that series nearly 2 months ago and have heard from a wide range of witnesses, including the NRC, DOE, industry, environmentalists, concerned citizens. This morning we shall hear from the NRC's Ad Hoc Committee on Licensing Reform; from Dixy Lee Ray, a former Chairman of the Atomic Energy Commission and having served a distinguished term as Governor of Washington, appearing on behalf of the Committee on Regulatory Assessment; two witnesses from the financial community, Hugh Devlin of Morgan Stanley and Eugene Meyer of Kidder-Peabody.

The witnesses today, I think, are intimately familiar with the workings of the licensing process and bring a wealth of experience and diversity of views, and I certainly think will be most helpful to us, this committee, and me, as we move forward with our consideration of the legislation. You are all familiar with the legislative proposals that have been submitted to the Congress by NRC and DOE, recommending changes in the current licensing process in order to achieve what is hoped to be a more stable, effective, and efficient approach to the licensing of nuclear powerplants. I look forward to hearing your comments and your recommendations on the steps that might be taken to improve this process.

I want to pay a special note of thanks to those of you who have devoted your time and your resources to come from afar to testify here today. Your efforts and your dedication are greatly appreciate by me and by other members of this subcommittee and full committee.

My apologies for being tardy, we were slogging along last night until about 12. I find the pay isn't bad but the hours are very poor, in this place.

Our first witness is Gerald Charnoff, Chairman of the NRC Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals, and if you would please introduce your fellow committee members with you here today and then please proceed with your statement.

STATEMENT OF GERALD CHARNOFF, CHAIRMAN, AD HOC COMMITTEE FOR REVIEW OF NUCLEAR REACTOR LICENSING REFORM PROPOSALS, ACCOMPANIED BY: STEPHEN LONG, DIRECTOR, POWERPLANT SITING PROGRAM, DEPARTMENT OF NATURAL RESOURCES, STATE OF MARYLAND; ROBERT F. REDMOND, ASSOCIATE DEAN, COLLEGE OF ENGINEERING, OHIO STATE UNIVERSITY; AND ANTHONY Z. ROISMAN, EXECUTIVE DIRECTOR, TRIAL LAWYERS FOR PUBLIC JUSTICE, WASHINGTON, D.C.

Mr. CHARNOFF. Thank you. Good morning, Senator Simpson. My condolances on the pay. I think we can probably do more about the pay of the Senators than we can with reform of reactor licensing.

Senator SIMPSON. Your pay is very poor in this job, I might add.

Mr. CHARNOFF. We will concede that for you.

Let me introduce the other members of the committee. To my left is Dr. Robert Redmond, and on my immediate right is Steve Long and then Tony Roisman. Two members of the committee are not here and they asked me to express their regrets. George Edgar had to be out of town and Dave Stevens, who does come from very far away, couldn't make it this morning.

Our Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals was established by the Nuclear Regulatory Commission to review the legislative and administrative reform proposals developed by the NRC Regulatory Reform Task Force. Since the inception of that ad hoc committee early last year, we have issued four reports to the NRC. Two dealt with the legislative reform proposals and two with proposed administrative reforms. The four reports were supplied to your subcommittee staff yesterday morning.

At the outset it may be helpful to set out what we did not do. First, we did not attempt to redraft the Regulatory Reform Task Force's legislative and regulatory reform proposals. Second, we did not review in detail the final proposed bill submitted to you by the Commission in February. Nor were we asked to review the DOE proposed legislation.

We did, however, review the principal concepts in the proposed reforms and we reached a remarkable consensus on most of the matters. Those views are set out in detail in our four reports.

The NRC's proposed legislation would provide for issuance of a combined construction permit and operating license at a single step, while recognizing that reviews of certain matters might have to take place at a later time. It also would provide for reliance by the NRC on certifications of need for power and generating alternatives by Federal, State, or regional organizations. It would provide for standardized design and early site approvals. It would provide for use of hybrid hearings; and it would provide some recognition of the value of granting stability by legislation to once made agency decisions. All of these concepts are generally consistent with our recommendations and we were pleased to see them reflected in the bill that went up to the Hill earlier in February.

We did receive last week a letter from you, Senator Simpson, addressing certain questions to us. We had not had an opportunity as a committee to deal with those matters. I would suggest that as an order of business we first allow the other members of the committee to talk about the process and conclusions of the committee, and then any of us, including myself, may have some private views, if you will, that are necessarily a result of our experience in the committee deliberations on the questions that you asked. We would like the privilege of offering those to you individually. But before I get into my own views, I wonder whether any of the other members of the committee would like to offer an opening statement.

Senator SIMPSON. Yes, Mr. Redmond.

Mr. REDMOND. If I may, I would like to just add a point of clarification on the reports. The earlier reports were discussed with the Commissioners in session with them. Our last report just completed has been sent to the NRC but we have not had an opportunity as a committee yet to discuss that report with the Commissioners. However, we are scheduled to do that I believe on August 4.

And I would just like to add emphasis again to a point Mr. Charnoff made, that we did achieve, I think, remarkable agreement among the committee on the majority of the issues we addressed. There are separate issues or separate statements on issues from various members of the committee, but I don't think that should obscure the fact we did achieve very good agreement on the primary issues we did discuss.

Senator SIMPSON. Thank you.

Mr. Long.

Mr. LONG. I would like to take the opportunity to point out that in the December 15 final report of the legislation you now have before you I did file a separate view on the conduct of the hearing, in particular the admission of contentions and the participation of intervenors. I believe in reviewing the administrative proposals since that time, we have developed a way for providing for an early identification of participants to the hearing and a fair and expeditious way of identifying the proper issues in good detail so they can be efficiently dealt with in an adjudicatory hearing, and I do concur now with the majority position of this committee.

The final result I think can be achieved in either of two ways. One is by an evolutionary process as we have laid out in our report on the administrative reform package. Two, provide for a two-step division of contentions. One is really an admission of a concept that needs to be further explored through the discovery process. The second step is finally the definition of the factual issue that needs to be resolved by an adjudicatory process. This can be done under the exist- ing process, as we have already laid out in the July 12 report, or it perhaps can be approached by the legislative hearing process, hybrid process, that is to be considered under the bill that is before you. In that regard, I really have no preference, and I wanted to make that point clear.

Senator SIMPSON. Thank you very much.

Mr. Roisman.

Mr. ROISMAN. No, I have nothing more to add at this time, Senator. Thank you.

Mr. CHARNOFF. Would you like us to proceed with our reactions?

Senator SIMPSON. Let me just ask a couple of questions, and you can each come in with your thoughts.

In our review of the committee's two reports to the Commission on its legislative proposals, we were fascinated by what appeared to be a remarkable degree of consensus among the committee members on the question of whether there is a need for licensing reform legislation. This is a group consisting of individuals from virtually every aspect of the spectrum of interest in the nuclear field concluding that the present process for the licensing and regulation of nuclear powerplants is in need of fundamental legislative reform. I think in your words, Mr. Roisman, quoted in one of your statements, one of the important reasons for doing the reform is that the hearing process and the total review process has demonstrably failed too often.

Could you please briefly, each of you, elaborate on what led you to this conclusion that you all seem to share? What was the single rallying point that might have guided you?

Mr. CHARNOFF. Tony, do you want to go first?

Mr. ROISMAN. Senator, I think it may be appropriate for me to go first because my reasons for the perception of the failure include a factor that I don't think the other members of the committee necessarily agree with.

I think we all agree that the process has some inefficiencies in it. That doesn't necessarily mean it is too slow or too fast, it just means it is cumbersome. It was basically written in 1954 and the world has changed and the licensing process should change with it. And the things on which I think we were in fairly basic agreement, that standardization is a good idea, that two hearings are unnecessary if one can be adenuate, that the mandatory hearing on issues that nobody is contesting doesn't seem to serve any useful purpose, and early resolution of issues that are susceptible to early resolution makes sense. I, personally, think that those problems are easily solved and if solved will do only a small amount in dealing with what are the fundamental problems in the hearing process.

We also agreed that the hearing process was desiqned to resolve disputes, that it had no extraneous primary function that it was supposed to be doing, and part of that is the recognition we think, I think certainly, that. the disputes that are to be resolved are ones that are important. We are not resolving them so one party can say, "I've had my day in court." We are resolving them either for safety or environmental reasons, the; need resolution. And without being critical of either the Advisory Committee on Reactor Safeguards or the regulatory staff or the work that is done by vendors and licensees and architects/engineers, we are saying that the hearing is an important additional decisionmaking point in reaching a conclusion on whether a plant is safe, environmentally sound or not, and what should be done about it. It is in dealing with that ultimate goal that I feel the process has most demonstrably failed.

Now, I look to things like the events at Three Mile Island, the scram failure problems at Salem, the fuel densification problems that started at Ginna, the earth quake problems at the Diablo

Canyon plant. Each one of these has turned out to be, just for a moment taking away any safety questions, enormously expensive, complex problems that have produced all kinds of delays in the licensing decisions, all kinds of expensive backfit requirements, and all kinds of expensive slowups in the operation of those plants that have been approved for operation. In each of these cases, the plants went through this hearing process and I, personally, feel that the process should be made more capable of responding to those kinds of problems. It would have been immeasurably better if the TMI problems that caused the accident had been the subject of the licensing hearing and had been resolved at that time so you never would have had the accident. If the Salem scram problems, the fuel densification problems, the earthquake problems—now, some of those may be scientifically impossible. It may be at the moment in time you are compelled to make a decision you didn't have enough information, and others may have been for other reasons. I have my own views as to what those reasons are. I believe my fellow members of the committee would disagree as to why it is.

At this point, I think recognizing that some reform is necessary and recognizing at least as I do that there is no hurry, we are not here dealing with an imminent emergency, I would think the most wise thing the Congress could do would be ask the Office of Technology Assessment, which is the Congress research arm in these technical areas, to come back to the Congress after spending 6 months and ask and answer the question, "Why has the hearing process failed to give us a higher degree of reliable answers to the question what is right and what is wrong with the plants and how should they be run and operated, and what could Congress do to make that process better answer those questions?" The range could include eliminate the hearing all the way up to make the hearing last longer. But the issue, it seems to me, is the crux. And that is why I, personally, feel yes, we need licensing reform, and once you have dealt with the crux issue you should also deal with what I think are the more peripheral issues. But, nevertheless, the duplicative hearing and standardization, first that question.

Senator SIMPSON. Thank you very much.

Yes, others?

Mr. LONG. I think I may disagree with Tony on some of the examples he gave as far as items that relate to failure that could have been caught in licensing hearings. The industry has not been mature very long, and indeed may not be mature now. A lot of these things cannot be easily foreseen until there has been some experience.

I believe that there may be a failing in the hearings, however, in that they may distract the staff from the day-to-day review of actual events in the field so that these things may be brought into the regulatory process at the very early stage as soon as they are discovered. The hearings to date seem to have focused all too often on the completeness of the staff review down to very small detail, sort of an obstructionist type of approach, so the staff has focused on things that have no result to the decision. One of the things we put forth as a committee is try to look to the important details, excluding the material that has too often turned out not to affect the outcome of the hearing once decided.

Senator SIMPSON. Thank you.

Mr. Redmond.

Mr. REDMOND. I believe I would like to pick up on one point Tony made. I don't agree with all of his concerns in terms of whether or not the Three Mile Island accident might have been prevented by more intervenor-type litigation. But I would like to pick up on the point that he made that I think needs some emphasis because it permeated all the committee's deliberations and recommendations, and that has to do with the primary, if not the sole, purpose of the hearing process being to resolve disputes. I think that, brought into sharp focus, tends to point out some of the problems with the current procedures and processes that don't keep that primary purpose clearly in mind. And as I say, I think that is, as you read through our reports, both the legislative proposal recommendations and also the administrative proposal recommendations, that is I think very important and I think a point that needs to be emphasized.

I believe there was a perception by the committee, in some cases firsthand experience, other from I guess discussions with others and knowledge of what is going on in this business, that there is a need for a more efficient and disciplined process for licensing not only in the hearing process itself but also in the backfitting aspects of regulation.

Our discussions and recommendations with regard to the administrative package I think also need to appreciate those were premised on the assumption that the administrative package should stand alone and apart from any proposed change in the Atomic Energy Act because we view that as a separate deliberation and set of recommendations. If in fact there are changes in the act, then, of course, we would have to revise whatever recommendations we made with regard to the administrative package.

That's all the comments I have, Senator.

Senator SIMPSON. Mr. Charnoff.

Mr. CHARNOFF. Let me agree that I believe the hearing process and licensing process requires reform. In my experience both on the committee and in the hearing rooms of the NRC, I have never been impressed that the hearing process has added very much to the quality of governmental decisionmaking with regard to nuclear power proposals. Sometimes I think that the hearing process works at least in the sense that it achieves one function, that is, we have been remarkably lucky in avoiding street riots perhaps because we have an opportunity for public expression. But in terms of enhancing the quality of decisionmaking, I think the process has been overloaded by a number of issues that are neither directly pertinent to the particular application; nor are they necessarily directly pertinent to nuclear safety matters. Because of the variety of new legislation that has been enacted in the last 10 or 12 years, the hearing process does look at a number of matters that are not within the expertise or competence of the Atomic Energy Commission or Nuclear Regulatory Commission. We deal with a lot of political issues and we deal with trials of the staff performance, which are interesting and not unimportant, but I don't know whether the hearing is the appropriate forum to deal with them.

Perhaps as a result of that or perhaps as a result of the fact that we are so busy combatting one another in those hearings we do tend to get deflected from real issues of quality. As a result, the focus seems to be elsewhere.

My own view has been that the adjudicatory format that we have with the licensing boards does not really lend itself to the kind of technical communication processes that are probably important to getting sound understandings of issues we look at in the nuclear world. We are not looking at factual issues of what happened at a particular street crossing where one car hit another car. We are really looking at judgmental issues. As a lawyer, I must confess I have gotten in the way of that process in the hearing room. My own view has been, on reflection, that it would be well if we could find a somewhat different format. One of my disappointments of the last year is that we haven't identified the kind of format that would be. Tony's suggestion of having a look at that made me think we ought to take another look at the Advisory Committee on Reactor Safeguards, beef it up, let it hear more from the public, and let it make sound, reasoned decisions of the type it has not in the past, and substitute it for hearing where the lawyers dominate the scene. Let the public and technical people who have something to offer get up there and be quizzed by their peers on the SCRS. Second, I am concerned with the instability in the present process. The decisions come late in the process. As a result they are not predictable either as to schedule or as to ultimate soundness. It is for these reasons that I endorse the idea of reform.

Senator SIMPSON. Yes, that is helpful.

I think that the notion that you all seem to endorse is that the purpose of the public hearing should be to resolve disputes between the parties. All of you have been active participants on all sides, or maybe the same side each time, in these licensing proceedings over the years, viewing firsthand the mechanics of the hearing. I have hunch that you are saying that we have strayed from the issue of dispute resolution as a fundamental objective and that that is a problem. So, say, if we were to adopt the Commission's formulation that "the purpose of the hearing is to resolve issues of fact in dispute between the parties to the proceeding," what impact would that have on the way the Commission currently conducts those hearings? Where does that leave us in our consideration of the other issues related to the structure and procedures for hearings such as sua sponte review, the role of the NRC staff which you have referred to, intervenor funding, that type of thing?

Mr. ROISMAN. We feel that each of those issues that you mentioned and the others can be examined in light of that basic concept and are in fairly good agreement on most, but not all. The staff role and intervenor funding being ones on which we do not have a full consensus. For instance, if dispute resolution is what you are about, then having the Board which is not a party raise an issue to be resolved in a hearing without any one party in the hearing carrying the issue but the Board sort of inviting everybody to talk about the issue doesn't seem to make sense. And so we have recommended and believe it would be appropriate for the Board when it has those concerns to have them addressed by the regulatory staff itself as part of its decision as to whether or not a license ought to be issued. If parties feel that they want to participate in that resolution, the staff has mechanisms by which we could do that. But it only comes into the hearing process if a party says that is an issue I want to bring in and then meets the requirements that are required to raise the issue in that hearing.

The question of whether or not you should have two hearings, if I have already resolved the question of whether or not a particular safety system in the plant will or will not work in the construction permit hearing, and it is the same safety system and you are now at the operating license hearing, there doesn't seem to be a whole lot of sense of resolving it a second time. If the question is whether or not we should have early site resolution and early determinations on sites, again, if the purpose is dispute resolution, then it makes sense to make sure the time when the dispute is resolved has something to do with the reality of perhaps changing the conclusion. If you are talking about whether the proper site for a nuclear plant is the site on which it is already built in the operating license proceeding, you are really not talking about real world. You may be able to prove at an operating license hearing what the plant should not be allowed to operate, but you can hardly make an argument under the Environmental Policy Act, whatever the cost and benefits, this plant should never be run at site A and instead should be built over here at site B. So you can logically work out, I think, in most of these areas results on which people if they accept the premise would have to accept the conclusion.

Where we begin to disagree is what about the staff? How does it fit into the process? Is it a disput out? Is this a mechanism for resolving disputes or is it an aid to the resolution of disputes, providing useful information for all the parties, since we as taxpayers are paying for them to do things, and then all the parties can take that useful information and use it as they wish? The majority of the committee seems to favor the proposition that the staff should not be as much a consensus party in the proceedings as it is now, that yes, if it has a point of view relevant to an issue that is in the proceeding it should come forward with that point of view, and that it should be able to advocate that position if it is in issue, but that it shouldn't be advocating on issues that are not related to that matter, that it should not get into disputes on discovery between the applicant and the intervenor as to whether the discovery time should be extended or not extended as those two things, that it shouldn't normally be getting into the writing of proposed findings of fact and conclusions of law since it is not, quote, a dispute in that. There is somebody in there that cares about that, the applicant, and intervenor, and State, whoever else. One member disagrees with that and a very brief but clear statement of his separate views are contained in the report dated July 12. That is Mr. Edgar who is not here.

On the question of intervenor funding, I alone am the only member of the committee, regardless of what form you put it in, that believes that is a vital part of the logical progression from where we are now to a dispute resolution proposition. My point of view, simply stated, is this: If an intervenor raises an issue which the board recognizes as legitimate that deserves resolution and if the intervenor says to the board we have experts A, B, and C who are undeniably qualified to address this issue and who if able to testify would address it in the following way or would do the following study but we are not able to pay them to do this, if you are about dispute resolution, no other party is prepared to see to it that those issues are properly explored, then the board should have the source or money by which it brings in an expert and the expert presents the information to fill it out.

Let me give an example. In the Seabrook nuclear licensing hearing, earthquake was an issue. One position taken by the staff and the applicant was there was a particular way by which you predict whether earthquakes will or will not occur and you use that in order to determine what design limits the plant should meet. The intervenor position was there was an alternative supported by a well-known and established seismologist from New England who worked in the Lincoln Laboratories which is a branch of MIT. In that case, if that witness had not been available to testify for free, as he was by his own decision, I think it would have been important for the board to hear the alternative way on which there was a legitimate dispute as to how you decide whether an earthquake of a particular size will or will not occur. The differing opinions produced significant results. The intervenor's expert was predicting an earthquake one level higher on the Richter scale than what the applicant and staff were. Because the Richter scale is designed as it is, that one level higher would have dramatically altered the way you design the support systems and safety systems in a plant. I, as a party to the proceeding, that is, as an attorney for one of the parties to the proceeding, feel that the doctor's testimony would have been substantially more valuable if instead of volunteering his time the board had been in a position to say, "Doctor, we want you to do this thoroughly. We want you to take your approach, analyze it in light of this plant and give us an answer specifically here." That would have taken some money. We never had occasion to ask him so I can't tell you what it was. Let's say $25,000 for him to apply his earthquake analysis techniques to the very spot where the plant in question was proposed to be located and come up with a definitive answer on that.

I think that is a necessary part of having a reasonable dispute resolution, otherwise you have dispute resolution without all of the evidence that is relevant to its resolution. It is in that way that I think the question you ask affects the outcome of all these different pieces that we are looking at.

Senator SIMPSON. Yes, thank you.

Do you have anything further to add, Mr. Charnoff?

Mr. CHARNOFF. Let me add just one thought on the intervenor funding question. I have just completed a hearing in a State where we have intervenor or witness fees being paid for intervenor witnesses. I don't have any doubt that that enhances disputes. It is not clear to me it enhances dispute resolution. Indeed, I am for a process that resolves disputes, but I don't know that we need to have a process that encourages the dispute. The key to me is that I don't really personally view the adjudicatory format as the ideal way to resolve a dispute. Where Tony is coming from is the concept that if we are going to have a dispute in an adjudicatory format, let's have everybody armed to the teeth so we can have all the information brought in. My own view is the best resolution is developed when technical people sit down and talk to technical people. That really is fundamentally the staff role. If a third party wishes to initiate a dispute and has the merits of a point to present, I think he ought to be heard, and that is what the adjudicatory format is for. But my own view would be if we develop an intervenor funding concept, all we will do is encourage the dispute and not necessarily enhance the quality of dispute resolution.

I don't know how the others feel about it.

Senator SIMPSON. Dealing with the issue of intervenor funding you will find that most of the Members of Congress, on both sides, agree that there were abuses in intervenor funding about 5 or 6 years ago. At least about then they began to correct, and now often you will find in legislation there is a prohibition against intervenor funding. I think that, as everything we do in this place, we correct and we often overcorrect. But I think intervenor funding for such a witness as you describe on that issue is probably quite valid. But the point came where we found intervenor funders who had no constituency. They just got a Xerox machine and phone system and they set up shop. That gave intervenor funding the reputation which made the Congress correct the issue. So that is the reality of this, and I have had some thoughts about that.

But you certainly touch upon something with regard to staff participation. Would it not be better if we removed the staff as a party to enhance the Commission's ability to do what people think they should be doing, and that is allocate their resources effectively to assure the public health and safety? That is the mission of the NRC. I have found in my time, and I don't do it with levity, but there are about 120 lawyers on the NRC staff. They have invented a most extraordinary and arcane administrative scene called "Son of Administrative Procedure One, Two, Three," or something. It is extraordinary when you probe around in it, and they love it. It is like they have preserved unto themselves something no one else can understand. I think that we should release them from that burden and let them get on with the protection of the public health and safety, without becoming deeply involved in the things that almost each of you have just touched upon. That is my view.

These proposals of hybrid hearings, let me ask you, both DOE and NRC have recommended a greater use of this option. That is the approach where adjudicatory procedures would be used to resolve substantial disputes of fact, with all other issues resolved through informal, legislative style hearings. In light of the congressional response of mandating that kind of an approach and proceedings for expansion of spent fuel capacity which we placed in the law recently, an approach in section 134 of the Nuclear Waste Policy Act, I wonder if each of you might briefly summarize your views on whether the Commission should be required or simply authorized to employ hybrid hearing procedures?

Mr. CHARNOFF. We as a committee took a strong position on that, that it ought to only be authorized. There are a number of significant reservations that apply to the hybrid process. First the precise of the hybrid process is that it will reduce overall hearing time, perhaps. Most of our experience has been that we don't lose time in the hearings where cross-examination takes place. We lose a lot of time getting to the hearing. In our view, the format for the hybrid hearings may well have the same sort of problems, under the concept written documents would be introduced, then people would argue as to whether or not there ought to be cross-examination, then there would be a determination as to whether there ought to be cross-examination, and then to the extent that is permitted you have the hearing. In fact, a new intermediate stage would be introduced into the process for contention. We believe, at least in the early stages, the use of this process would result in more review by the courts as to whether the determination to allow cross-examination or not was appropriate. That in itself introduces more uncertainty into a process that we are already complaining about.

On the other hand, it is clearly true that a lot of issues lend themselves to resolution without cross-examination. And we thought that the Commission ought to be authorized to have the process available, to use it on an experimental basis or from time to time and see how it works. But a complete mandatory shift from the present adjudicatory system to the hybrid system we think introduces a lot more uncertainties than those of us, who represent the potential parties who are the first to go through that mill, would like.

Mr. ROISMAN. In that regard, I had one addendum to the committee position, and that is I felt it was sufficiently uncertain that the process was fair to anybody, that the only way is when all the parties agree. If it is truly an agreement, then all parties should agree to participate. I think you qet parties in a hearing who might be pressed to do it. It might be that spent-fuel storage expansion is itself a good testing ground. I have been through one spent-fuel storage adjudicatory hearing. I must say I think the results that are reached in that hearing at the licensing stage could not have been but for an adjudicatory hearing. The results were a denial of spent-fuel storage transfer that was requested. It was overturned after the Commission changed the standards under which the decision was made. Maybe that in and of itself is enough of a testing ground if there are going to be any of those hearings to see can the system work, will it function properly or will it not? I was in the Gesmo hearing, which was a hybrid hearing, and I think it took longer because we went through these different steps, each of which was sort of like the old $164,000.

Senator SIMPSON. $64,000 in our generation.

Mr. ROISMAN. Anyway, it went to a different plateau each time. Well, that is how the hybrid system works. Each plateau is an opportunity not for science or technical issues to be resolved but for lawyers to fight. I share Gerry's view to the extent the lawyers can be removed from the process up to a point, I think he might take them out all the way and I wouldn't take them out all the way, that that is good. The issue here is not whether the lawyer is right that the time he should have for discovery is 30 days or 60 days, the issue is whether the information obtained in discovery is relevant to the substantive issues.

Senator SIMPSON. That is very helpful from all of you. Obviously you have worked in a collegial manner to come up with your views. I would guess that you have had some spirited conversation in that process among yourselves.

Let me come to one now which I see, the issue of backfitting. There is a charged word now that is going to come into the debate. It is much like the word "fine tuning" when you are talking about the Clean Air Act. You use the word backfitting and everyone narrows their eyeballs, says, Aha, that is what they are doing. That is the escape hatch, such such as fine tuning would be a way to trash the Clean Air Act. And I never believed that was the case.

But focusing on backfitting, the Commission is now considering the issue and I gather is intending to take some administrative action to bring some discipline to the process or imposing additional regulatory requirements on the powerplants once a license has been issued. The DOE and NRC bills take different approaches to the backfit issue, with the DOE actually proposing a backfit standard while the NRC bill simply directs the Commission to promulgate backfit regulations. I would like to have your views on the nature of the backfit problem and on the respective approaches taken in the two bills.

Mr. CHARNOFF. As a committee we did not discuss the two bills one versus the other. We did have extended discussions on backfitting as a problem and whether we need legislation or simple administrative reform would do. Our conclusions were that it would be helpful, but it is not essential, to have legislative sponsorship of a backfitting rule. It was clear to us that backfitting has to be done by the agency and it has to be managed in a responsible way. And the most fundamental thing we were recommending is that there be an articulated, written rationale for any proposed backfit by the staff members, reviewed at some responsibly high level within the agency. In and of itself, the requirement that that process be followed, that it be made public, would have a prophylactic value in terms of limiting the frivolous type of backfits or the backfits that aren't thought through. Those two steps are that there be a written, clear statement of reasons, and that it be reviewed and approved at a reasonably high level within the agency structure. I think the DOE bill talks in terms of having the Commission itself approve the particular backfit. We didn't go that far. We thought it should be high up in the agency. We think there is a need for discipline of the regulatory staff with regard to backfit proposals. We think that regulation stability probably is the single most important matter in the licensing process today.

Interestingly, it is independent of the hearing process. Most of us feel that the changes brought about by regulatory change have probably destabilized the industry more than the hearing orocess has. And we are aware that the Commission is initiating some effort. My own view is it is moving rather slowly, because we think and we recommended that the Commission on an interim basis could establish the elements that we have just proposed and do that as a matter of policy. The Commission seems to be moving more slowly. The others on the committee may wish to talk to that.

Mr. REDMOND. I would just like to add, Senator, the key point, the stability of the decision in the licensing process and that there be a more disciplined approach by the staff in requiring backfits, those were key elements I think in our discussions. But one further point was, we felt as a committee, the majority at least, there should be a weighing of benefits and costs, as a factor in the staff's decision whether to require a backfit. They should make a decision certainly on the technical merits where there are safety and health issues involved, but also there should be a cost-benefit consideration in that staff decision, and that it be reviewed at a suitably high level within the Commission.

Senator SIMPSON. Thank you.

Mr. Long.

Mr. LONG. I think there are a couple of conflicting goals in the backfit issue. One is to make sure the Commission does have the flexibility to revise their requirements on a licensee in order to protect the health and safety without having such a cumbersome process that they are inhibited at the lower staff levels from engaging the process. On the other hand, we want to make sure the process is not so easily instituted at the lower levels there is no attention from the upper levels, no integration, no review for necessity or importance. We were unable to define the appropriate mix of process to properly address both of these criteria. We felt, though, that it was important that the legislation recognize that backfit criteria should be developed by the Commission, but the Commission should be allowed the flexibility to experiment in how they are applied so they do end up with a proper mix.

Senator SIMPSON. Just a brief response if you could, Mr. Roisman.

Mr. ROISMAN. I think the key on the backfitting is really the issues as the NRC develops them in their legislative proposal. Two key points. No. 1, that the only issues that would be subject to backfit are those that had been considered and decided in a proceeding previously and, second, that the only standard that the backfitting should meet is that no backfit should be required unless it is required to meet legal standards. The concept that you can ratchet, require more safety than the legally required one, is abhorrent I think. And both of those concepts are contained in the Commission's backfitting proposal. The DOE proposal, in my judgment, is really draconian and would be a terrible thing.

Senator SIMPSON. That is a very good point you bring out, Mr. Roisman, because you know we find that we really go beyond the aspect of safety into super safety and on and on, a rather curious thing, but a natural human response when dealing with this energy source.

Let me just ask one final question and then we will move on to the next panel. You have been very helpful, and your report will be very helpful to us.

In testimony from the NRC and DOE, as well as from other witnesses, we were well advised that the current process provides very little incentive to raise and resolve issues at an early stage basically for two reasons: There is no guarantee that an issue once resolved will not be subject to relitigation at a later stage in the proceedings, and given the instability in the Commission's current process for imposing regulatory requirements, and that's evident, there is no guarantee that an NRC approval will not, at a subsequent date, only be modified. So you see there the major problem with the current process, that we think a major problem, and steps that might be taken to resolve that problem.

The issue of relitigation of issues is curious. The NRC is deciding whether to allow the litigation of issues which was or could have been raised in an individual proceeding. Under the DOE bill, the issue could not be relitigated if it has already been resolved in any Commission proceeding. In any event, if you could address that with regard to the issue or relitigation. And, finally, we can see in both of these bills these things could actually be accomplished through administrative changes. What advantage would there be, if any, of addressing those things in legislative rather than through administrative changes? I realize that is a marvelous load I just threw to you, but if you could respond to that I would appreciate it.

Mr. CHARNOFF. As I said, I think our view is much of it can be done administratively. I think in terms of sanctioning the concept that would recognize that surely technology changes over time, and this is true not only for nuclear but any other technology, but we as a society are willing to live with safety decisions once made unless there is some very large burden that is met that suggests that changes that have been developed over time ought to be backfit on an existing plant or decisions once made. Certainly there are people who would urge as nuclear plants get older and we learn new things, we may want to look back at older plants. We see that in all the things with existing plants and existing decisions. I think you have identified correctly the concerns that the industry certainly has with regard to the validity of a decision, whether it is a decision that is already reflected in a design or elsewhere. The question is can we plan on anything? And it is in that area that legislative sanctioning or blessing to holding to a decision would I think do a great deal to remind the agency and, if you will, to reflect the societal decision that we all live with risks over time. We don't keep changing things simply because somebody discovers something new. That I think would be the most helpful result of legislative recognition of desirability of backfitting control.

Senator SIMPSON. Thank you.

Any of you gentlemen want to add anything?

Mr. ROISMAN. One brief comment, Senator.

The idea that you should have legislative rather than administrative changes really relates to the question as to the doubt of legality of action. You put an enormous risk into the system if the Commission does not have legislative confirmation to take the course of action. I feel if you were to add economic costs as a factor to be considered in backfitting, you would most likely run afoul of already written language and long-standing history of the agency with respect to the inapplicability of those considerations in setting the statutorily required level of safety. There is now in the act a provisions that says that at any time the Commission learns information which if they had known it when the plant was originally licensed would have resulted in the change of license, they should now change. That is the source of why you have backfit. It is the logic of the Commission's view you should never change unless it is required by law, and a position I support. If you could have not put the cost factor in this decision, the first decision, then you couldn't legally, in my judgment, put it in making the second decision. Holding aside whether you agree it is legal, if the Congress decides they are going to let cost be a factor, if you don't do it legislatively, you invite litigation that creates doubt. I think we all felt where there is any significant doubt, it would be better for Congress to act and resolve the question, whichever way it was going to resolve it, rather than leave it alone.

Senator SIMPSON. Ironically, I think the latest Supreme Court decision on legislative veto will force the Congress to be more precise in many areas, which will be excellent in my mind, instead of the wide delegation of promulgation on into other agencies. It will force the Congress to be precise, and that is in a sense what you are saying. If we are going to do something that is going to create difficulty, interpretation problems, try to be more precise at the statutory level.

I want to thank you all very much. You are very helpful. I congratulate you and I commend you on your work. I know you invested a great deal of time and energy and I really appreciate it. So, Chairman Charnoff and Mr. Long and Mr. Redmond and Mr. Roisman, all of you, we appreciate your efforts very much. Thank you.

The next witness is Dixy Lee Ray, the vice chairman of the Committee on Regulatory Assessment of Scientists and Engineers for Secure Energy, Inc. She is accompanied by Marcus Rowden, chairman of the Committee on Regulatory Assessment of Scientists and Engineers for Secure Energy, Inc.

Nice to see you, Governor.

STATEMENT OF DIXY LEE RAY, VICE CHAIRMAN, COMMITTEE ON REGULATORY ASSESSMENT, SCIENTISTS AND ENGINEERS FOR SECURE ENERGY, INC., ACCOMPANIED BY MARCUS A. ROWDEN, CHAIRMAN, COMMITTEE ON REGULATORY ASSESSMENT, SCIENTISTS AND ENGINEERS FOR SECURE ENERGY, INC.; JAMES P. McGRANERY, JR., ESQ.; AND MIRO M. TODOROVICH, EXECUTIVE DIRECTOR, SCIENTISTS AND ENGINEERS FOR SECURE ENERGY, INC.

Dr. RAY. Thank you, Senator, for your warm words of welcome. As you indicated, I am Dixy Lee Ray, a scientist and educator by training and profession, and with some experience in the last 10 years in public life, both at the State and Federal level. From 1972 to 1975 I served as Commissioner and then Chairman of the Atomic Energy Commission. Today I am testifying in my capacity as vice chairman of the Committee on Regulatory Assessment. With me are three members of that group; Marcus Rowden, to my right, a former Commissioner and Chairman of the Nuclear Regulatory Commission and General Counsel of the AEC.

Senator SIMPSON. I take back everything I said about how many lawyers there are.

Mr. ROWDEN. Not as many as we have today. But some of this is a gift from Congress.

Senator SIMPSON. Please go ahead.

Dr. RAY. Mr. James P. McGranery, Jr., an attorney in private practice. And on my left is Mr. Miro Todorovich, who is professor of physics and chairman of the department of physics at City University of New York and executive director of Scientists and Engineers for Secure Energy.

This Committee on Regulatory Assessment was formed in 1982 by the SE_2 group, which is a nonprofit organization of scientists and engineers dedicated to facilitating communication between the professional scientific community and public policymakers on both energy and natural resource issues. The members of the CRA are scientists and lawyers with public policy experience in nuclear energy matters gained through prior service as members or heads of the Atomic Energy Commission and the Nuclear Regulatory Commission and in private sector nuclear activities. The CRA's aim is to develop and communicate to the responsible public officials recommendations for improvements in the nuclear regulatory process which merit legislative or administrative reform action.

We appreciate this opportunity to present our views on the need for nuclear licensing reform and the merits of the specific legislative recommendations that have been submitted by the Nuclear Regulatory Commission and the Department of Energy.

The members of our committee strongly support meaningful reform of the current licensing and regulatory process. You must recall this process was established years before the first commercial nuclear powerplant was built. It seemed sensible then and served reasonably well during the developmental decade or so that followed. But the hard fact is this process no longer matches the technology it regulates or that technology's role in our society. We are now paying a heavy price for this regulatory obsolescence—in misallocation of technical resources, regulatory unpredictability, lengthening licensing times, and unnecessary consumer costs.

Our members are unanimous in their view that the present process has serious structural and operational deficiencies. It is unstable, both in its requirements and unpredictable in its outcome. It thwarts industry and regulatory initiatives that would vastly improve use of safety resources. And it provides for public participation at a time after major planning and resource commitments have been made to a nuclear powerplant and it does so in a hearing format that is overly formal and not suitable to the resolution of technical issues.

The legislative measures submitted by the Department of Energy and the Nuclear Regulatory Commission both propose substantial improvements to the existing licensing and regulatory process. The two bills differ, however, in the manner in which they address significant problems. For convenience and for comparison, therefore, I will very briefly address each of the five major areas of reform covered by the two bills.

The first is backfitting—speaking more broadly, continually shifting regulatory requirements. By any fair measure, the current backfitting process is unsatisfactory. The scope and frequency of backfitting requirements are the largest cause of instability and unpredictability in the current process. Of parallel concern, the present backfitting regime lacks cohesion, coordination, and effective direction and, as such, it can be counterproductive from a safety standpoint.

The Commission is to be commended for the administrative actions it has already taken, and the further ones it is now considering, in addressing the backfitting problem. Without discounting the worth of administrative reform, however, we think that the public policy issues involved and the need for long-term stability and certainty warrant the incorporation of the principal backfit criteria within a statutory framework. In this regard, we support the central elements of the backfitting provision in the DOE-sponsored bill, S. 894. More specifically, we believe that a sound backfitting regime should provide a centralized review process for all backfit requirements. It should define backfitting to encompass the entire spectrum of ways in which new requirements are imposed. And it should preclude a backfit unless justified on the basis of impact on overall plant safety or security protection and the resources required.

Second, standardization. We strongly support the concept of design standardization and its application as a major nuclear program objective. We believe standard design will result in four significant benefits:

First, standardization will enhance the safety of nuclear powerplants by concentrating the industry's technical resources on fewer designs, by stimulating standardized construction and quality assurance programs, by improving personnel training, and by fostering more effective maintenance and improved operations.

Second, standardization will improve the quality of NRC licensing and regulatory actions by enabling the agency to focus its resources on fewer designs and in fewer review proceedings, thus allowing it to concentrate on the more important safety questions.

Third, standardization will contribute to the stability of licensing decisions by eliminating a major source of backfitting requirements—the present practice of commencing construction prior to completion of the design and the resolution of design issues.

Fourth, standardization will enhance public participation in the licensing process. Persons whose interests are affected will have an opportunity to have their views considered earlier in the process, before any major commitment by the utility to a facility employing the design. In addition, public participation will be more meaningful because the hearing will be held on an essentially complete and final design.

If standardization is to succeed, however, we believe the Congress must give it explicit legislative recognition as a major policy objective of our nuclear power program, as has been proposed in the NRC bill. In addition, Congress should authorize the NRC to grant approvals for final nuclear powerplant designs, independent of individual license applications; and such approvals should be explicitly deemed conclusive on all encompassed design issues in subsequent licensing proceedings for facilities employing that design. Further, Congress should establish a secure legislative framework in which the full benefits of standardization can be realized. This necessarily requires several complementary reforms—namely, single-stage licensing, early site approval, stability of approvals granted, and improvements regarding the time and manner of public participation.

We strongly endorse empowering the NRC to issue single- stage licenses authorizing both construction and operation of a facility where the license application contains sufficient information for the NRC to make all requisite public health and safety and common defense and security determinations. I should add that we clearly prefer the single-stage licensing formulation of the bill proposed by DOE over that in the NRC proposal. The former provides for true single-stage licensing. The latter maintains a second licensing stage. We believe that a second licensing proceeding at the operating stage, even though all major design and site issues had been resolved before construction commenced, would not only be unnecessary but would stand as an obstacle to the front-end commitment of resources which is essential to the success of standardization.

We endorse authorizing the NRC to approve sites as suitable for nuclear powerplants independent of individual license applications. We believe this proposal would enhance public participation by providing a hearing opportunity on the use of a site prior to a utility applying for a license to construct a nuclear facility at the site or making a significant financial commitment to the site's use. In addition, early site approvals would remove site reviews from the critical path of nuclear powerplant licensing, thereby reducing costly delays and adding greater certainty to the nuclear plant planning schedule.

We strongly support granting the NRC explicit authority to conduct hybrid hearings—that is, to use informal hearing procedures for all issues other than those which truly warrant a trial-type format because they involve disputed issues of fact.

We also endorse efforts to define the purpose of the hearing by legislation. Specifically, we urge the Congress to adopt the finding proposed by the NRC in section 2(a)(11) of S. 893, stating that the proper—and sole—purpose of the hearing should be to resolve disputes between parties to the proceeding.

For like reasons, we endorse the proposed elimination of the mandatory hearing in uncontested construction permit proceedings. Where there is no dispute to resolve, there is no sound reason for a hearing.

We disagree with those who believe that the proposals embodied in S. 893 and S. 894 would diminish public participation in the licensing process. As we assess them, the reforms proposed in these two bills offer far more meaningful opportunities for public participation than at present. The public would be provided with opportunities to participate early in the process—when it counts—before design and site decisions and before the financial commitments based thereon have been made; and the information base for the public participation would be substantially greater than is now the case.

Finally, I would reiterate that while some of the problems of the present licensing and regulatory reform regime can be addressed administratively—and the NRC has already taken a number of steps in this regard—legislation is required, we believe, to give the reforms I have discussed and the national policy support and regulatory certainty that are required for their effective implementation.

Mr. Chairman, this completes my prepared remarks. My colleagues and I would, of course, be very happy to respond to questions from you or your associates.

Senator SIMPSON. Thank you so much.

I do have several questions about the proposals before the subcommittee and your views on those.

The legislative proposals submitted by DOE and NRC contain a number of provisions, some of which appear to require legislation and others which would be accomplished by administrative changes. What value do you see in pursuing legislative solutions to problems that are capable of resolution through administrative changes?

Dr. RAY. I think the most important thing is that the legislative statement make clear the Congress intent and provides an additional incentive to accomplish whatever the purpose may be. Perhaps if I could maybe use the example of standardization.

The old Atomic Energy Commission made a real effort at this in 1973. That is now 10 years ago. I feel there was perhaps some increased interest on the part of the utilities. There was interest certainly on the part of many of the people having to do with the development of standardized portions of plants. We went so far as to have preliminary consideration of a standardized nuclear powerplant system portion of a plant. General Electric Co. proposed these standardized plants. But then there was no incentive for utilities to adopt standardization and, despite many efforts since, it has not happened.

Were it a part of congressional intent and stated clearly in the legislative package as a part of our nuclear powerplant program to achieve standardized designs, it would enormously increase the incentive to accomplish it, with all of the concomitant values and benefits that standardization has. That is just one example.

I think that while many changes can be brought about administratively, and the NRC has been engaged in implementing many of its changes in this manner, there is still both the clear legality, as has been previously referred to by Mr. Roisman's many statements, and the clear statement of intent as a part of national policy, which is an important thing that a statutory statement adds.

Senator SIMPSON. On that issue of standardization, why is it, in your view, that the current regulatory authority that is available to the Commission now is insufficient to encourage this greater use of standardized design and more extensive submissions prior to the start of construction, and what will we achieve? I think we will achieve some very good things by embracing the legislation and promoting the concept of standardization, but I would like your views as to why you think the current regulatory authority, and it is there and it is unused, and certainly I think one of the things that could come to pass if we get to the first licensing procedure at the start of construction and are able to show design 70 or 80 percent completed instead of 20 percent completed so we have no other possible thing to do but design as we go, which causes the tremendous costs and so on, but I would be interested in your views as to why that regulatory authority is not used?

Dr. RAY. I think, and this is my personal opinion, that, first of all, there is no real incentive to get the various vendors to agree on a single design or on a group of standardized designs. And sometimes it is like it is in science, you can always find a reason for wanting to add another study or do a little bit more here or perhaps suggest something that might make the difference in a sale to a customer by saying ours is a little better here, and so on. Perhaps the most important group that has, if I may be excused for using the word, a vested interest in custom design——

Senator SIMPSON. You can use that word freely in Washington any time you wish. It works all the time.

Dr. RAY. The large number of architects and engineers benefit from having plenty of work that is supplied by custom designs and, therefore, no real incentive to pursue standardized designs.

I think I would like to ask Mr. Rowden to also offer his views since he has more recent experience along this line.

Mr. ROWDEN. If I may, and if I may use your first question as a prelude, that is, why should the Congress bother with matters that the NRC, arguably, can deal with through administrative action. I started from a basic premise, and that premise is, and I think it is borne out by experience, the present regulatory process is seriously flawed. I only know the Congress has not revised that process in a thoroughly integrated manner for perhaps 20 years, 25 years realistically. The world has changed, as some of my predecessors at this table have commented, in very substantial ways, particularly in the nuclear area, during that period of time.

I think that there are basic national policy issues that are involved that only the Congress can legitimately address and on which only the Congress can give the imprimatur of national policy guidance. In terms of devising reforms to the present regime, I think only the Congress can put in place a licensing process or a reshaped licensing process which will have any semblance of continuity as far as the private sector is concerned. I think it is essential for stability and I think it is essential not only in terms of regulatory guidance but also to the business community in making the sort of decisions, multibillion-dollar decisions, betting lives of companies, that one calls upon them to make in determining whether or not to add additional nuclear capacity. And that, as I say, is really a prelude to my answer to your second question.

If the agency has the authority to do a number of things, which it certainly does, and as it has over the past 10 years, why do we need legislation? I think we need legislation because the customers are not going to believe it unless standardization is put in a framework of policy which establishes standardization as a major goal of the nuclear program and provides the sort of licensing incentives and regulatory stability that will make standardization viable. There are two elements that I think are critical. One is one-step licensing, without which standardization simply is not going to become a commercial reality, and second is an assurance that approvals, once given, will have some degree of permanence—not immutability, everybody recognizes technological improvements come along that have to be introduced. That is desirable not only from a safety standpoint but from a general technological standpoint. But the degree of impermanence in the system has been a total disincentive to take seriously the investments that have been made in standardization by the Commission itself.

Senator SIMPSON. It is interesting you both bring a perspective. The best historical perspective from you, Dr. Ray, serving as a Commissioner and Chairman of the AEC from 1972 to 1975, and you as chairman of NRC, Mr. Rowden, from 1975 to 1977, and the licensing process changed very little. In fact, some might say it has changed hardly at all since 29 years ago. And yet even when we began this series of hearings on the issue of licensing reform, there were many who said you are not going to do that, you are not going to get involved in that, and maybe the House may not even become deeply involved in it. We are really not quite certain what will take place. But it is not done as a pro-industry move, at least on my part. There is no venture in that for me. If we do nothing, what do you portend, not for the future of the industry, but for the promulgation and the embracement of the public health and safety, which is the issue for the NRC, that is their mission?

Mr. ROWDEN. If I may state a personal view, I think the public will be seriously shortchanged if there is no legislation. I think the present process contributes to a very disturbing misallocation of very scarce technical resources. It imposes costs which ultimately are borne by the ratepayers, many of which are necessary but many of which are unnecessary. It distorts the whole process of utility choice for fuel for additional generating capacity. My own idealized world perhaps, but one that takes into account the reality of the energy posture we are in, and which I think is observable, there are only really two basic choices as far as utilities are concerned in adding additional capacity from national interest and availability, coal and nuclear. There are many factors that go into a decision on the part of the utility as to what fuel choice it should make. The one factor that should not be a driving consideration is that if you utilize one process you have a regulatory regime which is relatively rational, relatively predictable, and relatively cost quantifiable; if you go down another road, you have a process which is unjustifiably long so decisions are made by default rather than reason. I think that shortchanges the public also.

Senator SIMPSON. Let me ask you, Dr. Ray, I think I sense what Mr. Rowden is saying. With the role of staff, and there has been discussion and you heard the discussion of the ad hoc group, the possibility of removing the staff as a party to the licensing proceedings, to then allow the staff to focus its limited resources on identification and resolution of significant health and safety issues, in your view, has the staff participation as a party impaired their ability to perform the basic functions that they are designated to perform under the statute? And would you recommend a change in their role in these proceedings?

Dr. RAY. Yes, indeed, I would. I believe there is enormous technical competence in the staff, that they are capable and do perform their job very well when it comes to the technical issues. But like most people trained in science and engineering, adversary proceedings are a foreign forum and the amount of time taken up when the staff must be party to trial-type proceedings, I think, is a misallocation of the intelligence and the technical competence that is there. The staff, I think, performs the essential function of developing the information, and that should be available, that must be a matter of record. They perform the critical function of questioning and assuring major and essential issues with respect to both public health and safety and security.

Senator SIMPSON. That is excellent. I wanted to ask in relation to that a bit, but one of the major differences I guess I wanted to come to between the DOE and NRC has to do with this manner in which they approach backfitting, and that issue exhausts a great deal of staff time. The DOE bill actually establishes a statutory standard but the NRC bill merely directs the Commission to promulgate a regulatory standard to guide the Commission. I would be very interested in your perspective as a former chairman. Could you give us your thoughts as to what you see as the strengths and weaknesses of each of those approaches?

Dr. RAY. I think the proposal that would put it into a statutory framework is essential. I agree with the proposal of the DOE bill that a central review is a necessary element. I think until we have a situation where it is clearly understood by everyone what general criteria apply that make backfitting necessary and the considerations that will be taken in making that decision, until we establish that in a statutory framework we are going to continue to have the uncertainty and the instability that the process now has.

Senator SIMPSON. Let me ask you this, both of you. I think in the NRC testimony—and this is important for me if you can share your views because of your rich background—in its testimony on the DOE backfit proposal, the Commission identified two major concerns. They said, first, that the codification of a backfit standard would serve to eliminate needed flexibility that would enable the Commission to come up with the most effective approach to backfitting and, second, they said by requiring the Commissioners themselves to make decisions on all backfits, you know that that is there and was mentioned earlier this morning, that that could serve only to create a bottleneck at the Commission level, perhaps impeding legitimate backfit requirements. I would ask if you concur with those concerns?

Dr. RAY. No; a statute does not have to be a straitjacket. I think the Congress has the ability to create a statute that has an amount of flexibility. As far as the concern of the Commissioners making the decision, I guess I have to say that is part of their business.

Mr. ROWDEN. Let me comment. It is certainly legitimate for the Commissioners to voice those concerns, though I draw different conclusions in addressing each of them. To begin, I think there is a general consensus that what we call the backfit issues is the paramount national public policy issue impacting on the nuclear process today. It is something that cries out for congressional attention; I think the Congress should speak on it. I think the considerations that go into a backfit determination at least in terms of the general criteria and the framework within which the Commission should exercise its authority in this is something the Congress should respond to. I think the Congress in terms of its response, and, Senator, you mentioned the new legality of the recent Supreme Court decision, has the wisdom to apply the genius of the legislative process to devising a regime which would establish criteria which would set the frame, but which would also give the Commission the necessary flexibility for implementing those criteria within that framework. Insofar as the Commission saying it would create a bottleneck, obviously a balance has to be struck. There are certain things the Commission must involve itself in. There are other things the Commission ought to be properly allowed to delegate to others as along as it has the responsibility for active oversight. I think the DOE regime comes closer to that but I am not saying that modifications in that regime couldn't be made which would would ameliorate some of these Commission concerns. I do not subscribe to the Commission view that it is sufficient for the Congress to tell the agency to go forth and do something good, which is essentially what the backfit provision in the NRC bill would do.

Senator SIMPSON. A final question. An increase of concern in recent years is this issue of quality assurance, and that is a keyphrase now, more than a phrase, it is very critically important we pursue it, and I have tried in my time as chairman and I know certainly Gary Hart in his time as chairman when I was ranking member was involved in that. But what do you see as the major benefits of the two proposed bills in the area of quality assurance, which is what people are really seeking? It is really down underneath all the things. We are seeking the public health and safety and quality assurance. What aspect of these two bills would strengthen the Commission's ability to bring a more rigorous scrutiny to bear in that area of quality assurance?

Mr. ROWDEN. I think the quality assurance problem arises and the basic elements of the solution have to be looked for at the industrial level rather than Commission level, although what I am about to say applies to both. I think the two central reform objectives in both the NRC and DOE bills are putting in place a more rational backfitting regime which would allow a more rational and effective allocation of safety resources, which I think is central to addressing the Quality assurance problem, would be step No. 1, and strong support for and encouragement of standardization, which has as one of its major benefits an improved regime for quality assurance. That would be my response to that.

Mr. TODOROVICH. Senator, if I could, as a practicing professional, it was during the time of the Kemeny Commission that the terms paper safety somehow became current, and I think what the Commission meant at that time was a lot of people under the overload of the regulatory framework began to substitute paper satisfaction of the requirements as being identical with safety. Technical safety is something that cannot be substituted. If this reform proposal gets there and reduces the overload, it will by that token already improve the allocation of time effort and interest in improving the real technical safety, which, as Mr. Rowden says, really basically belongs in the hand of professionals.

Senator SIMPSON. Dr. Ray.

Dr. RAY. I don't really have anything to add. I think quality assurance is really a central problem which has not been fully resolved, and under the present uncertainty and cumbersome system will probably continue to be a problem. It is only when we achieve a greater standardization and better allocation of resources and personnel that the problem would be brought under control.

Senator SIMPSON. I want to thank all of you. You have been very helpful. You bring a breadth of experience and knowledge to the process and plain old hands-on experience. I am sure it must be a bit—I won't call it frustrating, but it must be odd to view the same framework that you saw when you left here, the same framework that perhaps was there 29 years ago, or at least 15 or 10, while we deal with a speeded up, different kind of process totally, and we hope we can bring some order into that, some better procedures into that. At least that is what my goal is.

So I thank you so much, and particularly you, Dr. Ray, for taking your time to do this, and Mr. Rowden, very helpful, and Mr. McGranery and Mr. Todorovich. We really do appreciate your participation.

Dr. RAY. Thank you, Senator. Let me just add one thing. Yes, a superficial reflection, it might lead to some frustration to see some of the problems we wrestled with 10 years ago still problems, but what is really refreshing is to see this serious and well considered effort on the part of the Congress to review the whole regulatory process, and I am sure it is going to lead to the right kinds of reforms.

Senator SIMPSON. Well, thank you.

The final panel this morninq will be J. Hugh Devlin, managing director for Morgan Stanley, and Eugene W. Meyer, vice president, director of utility corporate finance, Kidder-Peabody & Co.

STATEMENT OF J. HUGH DEVLIN, MANAGING DIRECTOR, MORGAN STANLEY & CO.

Mr. DEVLIN. Thank you, Senator.

I would just like to briefly summarize some of the elements of my written testimony which has been submitted. I should say that Mr. Meyer and I did not collaborate on this testimony in any way, and in reading his statement this morning there is a remarkable similarity as to the nature of the problem that investors are facing in reaching decisions on companies involved in construction of nuclear powerplants and also on the severity of that problem.

As we proceed through what I believe you will find a rather frightening financial picture for the U.S. electric utility industry, let me say investors are aware of legislation and other steps to help clear the unintelligible framework that surrounds nuclear power licensing today, and we urne you to take steps to rectify that situation.

At the outset, I would like to point out that during the course of this testimony I will use the term investor meaning either individuals or institutions. The important point is that we are talking about real dollars and the erosion of the value in the portfolios of millions of Americans, not some mythical group of robber barons or fat cats.

Let me briefly summarize the current financial condition of the electric utility industry.

In 1972, the average bond rating or rating on the longterm debt securities of those companies was double A. This is probably the best barometer or measure of financial health of an industry. Today, the average bond rating is triple B, the lowest category of what is referred to as investment grade security. Many shares of new common stock have been sold below book value to finance construction.

This financial decline has been the result of many factors. A principal cause has been extended and unpredictable construction programs of the nuclear power industry.

The problems associated with nuclear licensing and regulation, because they increase costs and delay construction, have contributed significantly to the weak financial condition of the industry today. Standard & Poor's, one of the independent rating agencies, states that 11 of its 14 utility bond rating downgrades in 1983 were strongly influenced by credit stress associated with nuclear construction. Thirty-one of the 50 utilities with nuclear units under construction have ratings, long-term debt ratings, of less than single A. For the first time, six of these are rated double B. This has the effect of eliminating important sectors of the market who cannot either by law or will not by choice buy speculative investments, such as State pension funds, for example. This, in time, reduces the availability of capital and increases financing costs.

We are frequently asked about investors' attitudes toward nuclear generation. For investors, the problem is not nuclear generation but nuclear construction. For units under construction, investors have seen numerous changes in the costs and schedules. Yes; inflation and interest rates are contributors, but it is estimated that the evolving NRC requirements cause 50 percent of these increases. Investors have little confidence they have seen the last of these unscheduled costs escalations.

As to future plant commitments, the continually changing NRC ground rules and the post TMI period have created such uncertainty about ultimate cost and duration of construction that neither utility management nor investors will voluntarily enter into ventures with such high risk. Investors dislike uncertainty and avoid risk. The NRC is viewed as a regulatory risk. The constantly changing requirements as to backfitting delays, cost increases and uncertainty make it very difficult for investors to appraise risk and reach investment decisions.

Stabilization and greater predictability of the nuclear licensing process will make the business of nuclear utilities more certain and attractive for investors. This will, over time, provide greater capital flow and reduce capital costs necessary to restore financial health. Although not the total answer to the electric industry's financial problem, we believe that nuclear licensing reform would be viewed by investors as a positive step and would indicate support of nuclear construction from the Federal Government.

Last, legislation which directly assesses the problems of a lengthy, unpredictable NRC licensing and regulatory process will be received by investors and should improve the capital formation process for utilities involved in this process.

Thank you.

Senator SIMPSON. Thank you very much.

Mr. Meyer.

STATEMENT OF EUGENE W. MEYER, MEMBER, BOARD OF DIRECTORS, KIDDER, PEABODY & CO.

Mr. MEYER. Thank you, Senator. I, too, will try to summarize my testimony, although it is relevant to point out that sometimes my sunmaries turn out to be longer than my direct testimony.

Senator SIMPSON. I have found many like that.

Mr. MEYER. I think as important as an understanding of S. 893 and S. 894 certainly is, an understanding of the status of the nuclear industry today and the reasons for that status is very important. It is no secret that there have been no new orders for nuclear generating plants in several years. In fact, there have been numerous cancellations of plants for a variety of reasons. I think I am safe to say also that it would be a near miracle for a new nuclear generating unit to be ordered for the balance of this decade.

The reasons for this situation are many, but among the most important is that the companies constructing nuclear plants are unable to earn an adequate return to take the risks inherent in such construction. In addition, we currently have, in this Nation, an inadequate demand for electricity to go forward and to continue to add generating capacity over the decade or two ahead. Also, we have interminable delays in licensing approvals which is what S. 893. and S. 894 are all about. In addition, there are constant changes in the regulatory ground rules long after huge amounts of capital have been committed and cannot be retrieved. And, finally, we have the politicizing of the entire process which has caused utility managements, I think quite correctly, to throw up their hands in despair and conclude that under no conditions will they build another nuclear powerplant.

Now, all of these reasons apply to the construction of all generating units, whether fired by coal, oil, water, what have you, but they are more acute in the area of nuclear power. Therefore, S. 893 and S. 894 attempt to deal with part of the problem, the timeliness of the Federal part of the regulatory process. You still have the whole State regulatory and local governmental body and environmental regulatory process to deal with. Notwithstanding this, it is critical that the uncertainty of the NRC process be minimized if capital is to flow to this industry in the future. Passage of either one of these bills would be an important psychological boost, and I can't stress this enough, an enormous psychological boost in the critical battle to finance the construction of those nuclear units which are still under construction and where the only viable economic choice is to finish them rather than to cancel them.

Over the long term, the standardization of equipment and consolidation of the hearing and licensing process would be helpful to the construction of nuclear plants. But the Senate should know that the other uncertainties which I have mentioned—inadequate return, decreased demand, reductions of the other regulatory roadblocks, and depoliticizing the whole process—must also occur before we can expect any additional new plant construction will be contemplated in this country.

That concludes my summary.

Senator SIMPSON. Thank you very much.

Your testimony, both of you, indicates that the entire utility industry is undergoing some degree of financial instability occasioned by the changing outlook for electrical demand. That would be a reason. To what extent are the financial problems currently confronting the nuclear industry similar to those faced by other utilities with no nuclear capacity, and how significant by comparison are the financial problems that are unique to the nuclear industry?

Mr. MEYER. Let me answer it this way. I think that the question of demand impacts upon all utility companies whether their generation is coal, nuclear, oil or what have you. But keep in mind that it doesn't take 12 to 14 years to put a coal plant on line. In the case of the nuclear plants, it has turned out that people making a decision to build one have had to make a correct estimate of demand 14 years into the future as opposed to 3, 4, or 5 years into the future for a different kind of generation. The peril of being wrong in projecting demand is infinitely greater for nuclear because the process takes so much longer to construct.

The question of demand impacts upon both, but it is more severe upon nuclear for the reasons I have given you.

Mr. DEVLIN. I would just add that certainly we would agree there can be a convergence of events that can influence the financial condition of an electric utility company whether it be involved in nuclear construction or not. Put the evidence is pretty clear that those involved in large nuclear construction programs have suffered the most and have come out of those programs in the weakest financial condition. Certainly, State regulation in terms of granting adequate returns on business overall in many cases has been inadequate and has not really reflected the facts. I think the industry overall is in a more liquid and in a better position than it was 4 or 5 years ago, primarily as a result of recognizing that there has to be greater balance between the need to serve and the need to provide adequate return to investors to continue the capital flow.

Senator SIMPSON. Both of you testify in support of legislative changes to address the problems that have been identified in the licensing process. In those areas where those same problems might be resolved through administrative changes by the NRC itself, would that approach provide the same degree of assurance that you both indicate must be felt by the utility industry? Would that approach provide the same degree of assurance from the perspective of the financial community that those problems then really had been dealt with with some finality?

Mr. DEVLIN. I would say no, they would not on the basis of either administrative proposals or a new framework. I think there is overall a general lack of confidence on the basis of the last 4 or 5 years' experience that intent is necessarily followed through with action that translates into something that is both understandable to the average investor, who you have to understand has an array of choices in terms of how they invest their money. I think they have essentially lost faith and are looking for something basically more direct, more positive, more instructive in terms of the future for nuclear licensing.

Senator SIMPSON. Let me ask you this. It is clear to me from your testimony that neither one of you feel that the passage of this legislation in itself will lead to some type of rebirth of the nuclear industry, and that is a view I happen to share. That isn't the point with me. But beyond the question of future application, though, which aspects of the proposed legislation do you see as having the greatest impact on currently operating plants and plants under construction, and will the adoption of those provisions have any effect on the outlook for the financial community on those plants?

Mr. MEYER. I think that these two bills would have relatively little direct impact on plants under construction or certainly plants already operating, and to the extent that there would be some direct impact it would probably be primarily in the backfitting area. Certainly, the standardization of equipment area is not applicable at this late date to plants in operation or well along in construction, or would be in a very minor was at least. And the consolidation of the hearing procedures and licensing procedures, most of these plants under construction would still have to have that one final hearing to determine whether or not the plant should be allowed to go commercial or should be allowed to operate. So, I don't think it would have a great deal of impact on those. But I do believe that the Congress of the United States, by getting its arms around a major portion of the regulatory, administrative uncertainty which has caused a loss of so many billions of dollars to investors over the past 15 years, would provide a psychological boost to the marketplace. It will probably be the first positive thing we have had to say to investors about nuclear power in a lot of years.

Senator SIMPSON. Assuming for a moment that the utilities were in the market for additional base load electrical generating capacity and a utility makes a decision to construct a nuclear facility, what sort of a response, if any, would that kind of a decision trigger in today's current regulatory environment? How would you compare that decision to construct some other type of facility such as a coal-fired powerplant?

Mr. DEVLIN. Your question is on the basis of one that would be announced currently, not the decision to proceed with one that was 10 or 15 or 20 percent complete?

Senator SIMPSON. Yes.

Mr. DEVLIN. Without being flip about it, I think the management of that utility in terms of investors would be looked at with such skepticism and disbelief because in fact they were going to undertake this sort of venture, with the risks associated with it. I think there would be outright a significant reduction in the market value of their stock. Investors would want to know and know quite clearly what assurances they had either from State regulators or from the NRC that proceeding along this path wasn't going to lead them in much the similar course that other utilities which have been attempting to complete units for the last 3 or 5 years have faced. I can't think of anything that would be viewed more critically.

Mr. MEYER. I cannot imagine it happening under the current context. I furthermore don't know of really any State regulatory body at this point in time who would go along with that notion, would even allow the management to go forward and grant a certificate of need and necessity. To the extent that one would, I would still be terribly suspicious—well, I really think the prudent investment banker, Hugh or myself, would tell that company there is no way that we feel at all comfortable that you can raise the capital necessary to complete that plant and as a result we may well question whether we would even underwrite such a security.

Senator SIMPSON. And you would possibly both recommend the administration of a saliva test?

Mr. MEYER. Easily.

Mr. DEVLIN. Appropriate.

Senator SIMPSON. What if the utility said it was going to go ahead with the coal fire, it is on the board, what would be the response?

Mr. MEYER. That is a little easier for me to deal with in this sense. That happened within the past 2 years. Tampa Electric Co. has a series of coal-fired plants on Tampa Bay, one right next to the other, and they are all completely standardized design, familiar words considering the bill we are looking at. And you would be merely adding a fifth unit. Before that company proceeded, it did something different than it had ever done before in constructing a generating plant. Before it spent dollar one, it asked for hearings before the Florida Public Service Commission, not a 20-minute long certificate of convenience and necessity like it used to be where it was a rubberstamp, but an extensive, several weeks' hearing, where experts pro and con were brought in on the subject of demographics in that area leading to demand growth and economic growth, environmental experts to deal with the impact of another unit in that area, and just about everyone you could think of, including projecting the financial results of that company out through the remainder of the decade, assuming different levels of interest rates, different levels of costs of capital, different inflation rates, and so forth. All of this was done to lay before the commission everything they could think of that might result from a decision to add one more standardized coal-burning unit. All of this was done in the sunshine so that the commission would come down with a ruling and couldn't ever say later, "You didn't tell us rates might go up, you didn't tell us you might have to have extra equipment to clean that coal." Everything was up front. The hearings were held, the decision was made on the part of the commission and company to go forward and build that generating unit. Incidentally, Senator Simpson, that is the only coal-fired generating unit that I know of that has been started in the last 2 years.

Mr. DEVLIN. I would just add that I think the primary concern among investors were there to be additional announcements—in addition to the one that Gene mentioned—would relate to the environment, No. 1, with all the uncertainty that currently prevails in the environmental front both having to do with acid rain and otherwise, that is, their ability or their plans to meet both existing and projected environmental requirements in an area, and second, the reliability of a low-cost source of fuel for that plant. I think these would be the two things that investors would focus on primarily.

Senator SIMPSON. How long did that process take from decision to do that open process in the *Tampa* case until the end of it, how long did that take?

Mr. MEYER. The hearings took place in late November and early December 1981 and the decision was rendered and construction of the plant began immediately. It is expected the plant can be completed certainly by 1985.

Senator SIMPSON. So there is a 4-year's solid block of time that they could see.

Mr. MEYER. Yes, Senator. And when you look at these two bills and you look at this call for standardization of equipment and consolidation of the regulatory period, that is what it is all about, getting the time period down to where someone can evaluate the risks of the supply and demand of the product in an intelligent way.

Senator **Simpson**. Let them ask you, which is the most grievous problem, knowing that 12 years is just too long to do a plant or the continual unpredictability of the present system?

Mr. **Devlin**. I think clearly the continued unpredictability. Yes, 12 years is a long time in anyone's book, but recognizing that this period has been continually stretched out over the last decade, investors have little confidence, and utility managements for that matter have little confidence, that that 12-year requirement is going to hold up and the cost escalations during that period of time are in any way measurable at the onset.

Senator **Simpson**. Well, you have been very helpful and have added another dimension to our record which hopefully is a consistent and balanced one. I thank you. You have been very, very helpful.

We will recess until 2 o'clock, when we will conclude the hearing.

[Whereupon, at 12:10 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.]

AFTER RECESS

[The subcommittee reconvened at 2:13 p.m., Hon. Alan K. Simpson, chairman of the subcommittee, presiding.]

Senator **Simpson**. The hearing will come to order.

We will continue with our hearing on nuclear licensing and regulatory reform and begin with the Governor of Arizona, Bruce Babbitt. I can tell you it is a pleasure to have you here. I remember so well working with you, watching your work product with regard to the very effective work you did after Three Mile Island, and that was a very thoughtful and energetic effort you put into that. And I, personally, am very pleased to have you here and admire what you do in the field of public service. So glad to have you, Bruce.

STATEMENT OF HON. BRUCE BABBITT, GOVERNOR, STATE OF ARIZONA

Governor **Babbitt**. Mr. Chairman, thank you very much. It is a pleasure to be back. I don't envy either you or this committee as you struggle with these endless and seemingly intractable problems. But it is a pleasure to be here. Senator Mitchell likewise.

Senator, if I might, I will simply summarize my written testimony.

I am aware, well aware, of the lengthy process that gave birth to this bill. I am speaking of the Nuclear Regulatory Commission bill. It is the product of an awful lot of compromise, a great deal of hard work and sincere efforts. Having said that, I think it is a very disappointing bill. It has concedingly some positive features that I think there will be substantial support for. The stripping out of some nonessential, non-safety-related adjudicatory functions, some streamlining of the adversary process in an attempt to mold it a little more closely to the technical decisionmaking that goes on.

The one-step licensing before the design side of the regulation I think is appropriate and is a measure in correct response to the evolutionary changes that go on in the technology. It has begun to stabilize. The problems in some measure have been circumscribed and understood and the one-step licensing seems appropriate for that side.

Having said that, I believe the bill misses the overriding, crucial, important difficulties in nuclear regulation, and indeed, if anything, makes matters worse.

I would start by saying that I believe that the issue in nuclear safety regulatory today is management, is management and technical competence. That is not a new discovery. In the wake of Three Mile Island, your committee, the many commissions, the NRC lessons learned study, all focused upon the uneven quality of utility management as the greatest threat to the safety of operating reactors. The record since that time is I think very, very disturbing. We have seen a continuing litany of serious difficulties in construction, quality assurance, operation, management, all traceable to failures of management and technical competence in the utility industry. That is the issue. That is the treat. And I submit to you that any regulatory changes that don't address that issue precisely are peripheral at best.

If you look at—well, I won't get into the specifics, but if you look at Marble Hill, Midland, the seismic design failure at Diablo, the quality assurance at south Texas, a complete breakdown of the continuing problems at GPU, the Salam scram failure, unanticipated accidents that many thought could never happen finally did due to the most routine maintenance failures, the problems at Brunswick. I won't dwell on those. I think they are well known.

Now, the issue is what can the regulatory process do to come to grips with this unevenness in the utility industry, an industry which ranges in management and technical competence from very good to very inadequate. If we are going to salvage this industry, if nuclear power has a future, the regulatory process has to force and push the industry to a uniform level of competence, resembling what you see at IBM, what you see at the Boeing Aircraft Corp. in a regulated industry which works very, very well under entirely different, nonadversary model beneath the Federal Aviation Administration which is grounded on the assumption there is technical competence. It is missing in the utility industry and the regulatory challenge is to see what can be done about it.

The deficiency in this bill is section 185. Section 185 is the single-stage licensing proposal. It fails to distinguish, in my opinion, two different aspects of licensing. One is design review; the other is management review. I think section 185 is appropriate for design review for the reasons I have explained. I think it is a long step backward as applied to management review. Admittedly, there are some ambiguities in section 185. If you match it up with section 189 and the other parts of the bill, there is some ambiguity, but I think it can be fairly read as follows:

Any issue surfaced in any substantial fashion at the single-step licensing stage is presumptively unavailable for future systematic examination, including management issues. Now, Commissioner Gilinsky explained from one perspective what the problem is with that. You can't sign off with management at the design stage. It is kind of like building a football team or any other kind of athletic team. The management, the assembly of the team, the acquiring of technical advisers, operator is an ongoing process. It is the most crucial process. It is the one where the failures are occurring. It is one which must be systematically assessed and checked on the eve of power operation. And I believe this bill is an invitation for the industry and others to contend that that kind of review is unavailable, that it is foreclosed by concepts of res judicata in section 185, and that the Commission will no longer have the authority to line up the management for a dress rehearsal on the eve of power operation.

I might add, paranthetically, the Department of Energy bill makes no pretense at all and I think can only be characterized as naive and dangerous. It explicity eliminates that. The NRC bill is ambiguous, but I believe it is fair to say that is as good an interpretation as any that can be out forward. And for the reasons Commissioner Gilinsky has explained, the idea that you can give a green light in a single-stage licensing process for the management side is logically unworkable and in light of the problems in this industry I think would be really flirting with disaster.

I would make one other point. This management issue, this issue of how we get some uniform technical competence in this industry has got to be stressed. It must be stressed and reviewed on the eve of full power operation. It must be looked at at the construction design, construction licensing phase. And I would submit to you that a thoughtful and comprehensive bill would also mandate some kind of inquiry on the very front end of the licensing process. Part of the difficulty in this industry is that there is no gatekeeper. Any utility historically that has wanted to wrap its arms around a nuclear reactor has had the right and the presumption of ability and has been allowed to enter into the licensing process. To get into the licensing process, the reality of withholding a license becomes more and more unreal the further you go down the road. And my own judgment from some years of looking at nuclear powerplants, kicking the tires, talking with management, reviewing the failures, is that somebody has got to make some judgments at the very front end of the licensing process.

Let me conclude with a couple of examples. I think it is fair to say if the Commission had had a front end responsibility, a gatekeeper responsibility, that the WPPSS debacle in Washington might have been averted. Somebody should have asked on day one can you really handle nuclear technology with a jerry-built, umbrella management structure pulled together from all over the landscape, from all sorts of small utilities around the Northwest? The Nuclear Regulatory Commission has never had a mandate to ask those kinds of questions, and they ought to be asked. Zimmer in south Texas are other examples of utilities which were allowed onto the licensing track with no assessment of whether they had presumptively the competence to handle a nuclear utility and with no questions asked as to why it was they were hiring architects-engineers with no track record and constructors with no track record.

I guess what I am saying is that, No. 1, management is the issue. This industry is not going to make it unless we can somehow move it up to a level of uniformity that is not now characteristic of the industry. No. 2, single-step licensing would defeat the ability of the regulatory process to do it. No. 3, any legislation must have a clear delineation of the Commission responsibilities on the eve of full power operation. No. 4, the licensing process should be extended in the other direction to define the need for some kind of threshold finding the day a utility walks in the door of the Nuclear Regulatory Commission and says, "I want to be a nuclear utility."

Mr. Chairman, Senator Mitchell, thank you very much for this opportunity.

Senator SIMPSON. Thank you very much, Governor. In your testimony you point out this question of utility management and plant operations. That is an issue that deserves most careful scrutiny and attention by the NRC, in fact, a degree of scrutiny really equal to that brought to bear by the Commission in the design and construction of the plant. In your supplemental views on the Kemeny Commission report you stated that the issue of who would be allowed to run nuclear powerplants is the most serious unresolved issue. And the emphasis you place on management competence, insuring that capable people, trained professional people, are in charge of running these plants is a view I certainly share, and I mentioned that before. You go on to express your concern that the NRC's legislation will serve to restrict the Commission's ability to oversee this important issue. I wonder if you could briefly expand on that point, in particular perhaps share with us those portions of the bill or the generalities of the bill that you view as somehow cutting back the Commission's authority to examine management competence?

Governor BABBITT. Senator Simpson, I think the trouble begins with the language of section 185(b) which is the language which says the intent is to enable the Commission—I'm sorry, it is in my testimony the exact language, the characterization by the Commission. It requires the application to contain sufficient information to support the issuance of both the construction permit and the operating license. Now, that language is only suggestive of the intent to get everything on the table in the form of information sufficient to support the issuance of the license. It seems to say to the applicant you have got to make a prima facie case sufficient to support the issuance of both licenses. I then read the language of section 189, which I find very confusing in the way it is drafted. But, for example, I refer you to section 189(d), which in the context of the hearing process excludes issues which were not and could not have been considered. Now, I admit section 189 applies only to the parameters of the public hearing process and you could make an argument that the Commission remains free to raise any issue it wants anywhere, at any time. That is not the way the industry is going to interpret this bill. There will be litigation. And the whole flavor of this process is we want to come to the Commission once, we are going to lay our cards on the table, if you have any objections we want to hear them now because when we walk around with that CPOL, that is it.

Senator SIMPSON. If the Commission were to make some decision at the front end of the licensing process that a given utility has the sufficient management strength and expertise and technical competence to build and operate a nuclear powerplant, an approach which you recommend in your testimony, and if no significant new information, none at all, hearing on management competence is raised just prior to the operation, would you then require the applicant to somehow reestablish the same level of management competence that was obviously had to have been demonstrated at the time of the construction permit granting?

Governor BABBITT. Senator, I think there are two strands of this competence. One is one that I think can be more or less laid to rest at the front end, and that is, is this utility, does it have the management and financial strength and organization to be in this business? Admittedly, not an easy judgment to make, but I do believe if you look back over our accumulated history you can find many negative examples even on the facts known at the time that would have merited rejection. The issue on the eve of power operation is different. I would label it technical competence. It is the nature of the nuclear team that has been put together paralleling the construction of the reactor. Not how good is the utility as a utility, but have they gone through all the loops in hiring their team, in polishing them up, in putting them together in a way to handle the reactor. You can't really do that on the front end. I don't think it is reasonable to say to a utility show us your nuclear team, including the guards, the tackles and the ends, because they are not really assembled and melted into the team until the end of the process.

Senator SIMPSON. I guess I am trying to determine whether you are really interpreting the proposed legislation as precluding the consideration of significant new information that bears on the question of management competence. I don't think any of us want that. In the event the information was not or could not have been raised at the outset, I do not read into that that management competence can't be an issue from the start to finish.

Governor BABBITT. Senator, it does not clearly by its terms preclude the consideration of the continuing consideration of information bearing on these issues. The flavor of this process I suggest deemphasizes the importance of these and will give rise to an environment into a retreat of the language of section 185 and 189(d) in which utilities will say we raised those issues, you passed on it, and we are going to go to court to argue about whether it is significant, we are going to go to court to argue about whether it is new, and ultimately devalue the importance of that threshold determination at the very end of the process on the threshold of power operation.

Senator SIMPSON. Certainly your emphasis on management abilities and skills is very important, and we know that, and the Kemeny Commission found that and this subcommittee found that when I was the ranking member and Senator Hart was chairing it. Management competence, professional training, paying them what we thought they should be receiving as they performed those duties. And in your task as chairman of the Nuclear Safety Oversight Committee and your recommendations to the President through your correspondence of a couple years ago, you had recommendations there. You cited the need for a thorough legislative and administrative restructuring of the licensing process. You made a number of excellent recommendations that I think appear to me to be a bit similar to proposal which are included in either the DOE or NRC proposals. One was that the operating license proceeding should be restricted to auditing performance of construction permit conditions. That is an approach that is similar to that contained in the DOE bill, as I read that legislation, and so I was very interested and want to pay particular heed to what you say now because I want to have your background and your experience as we hear it. You are suggesting now that a unilateral certification of readiness by the utilities prior to startup is an even greater threat to nuclear safety, and I would ask how the DOE bill differs from what you say, as I read into what you are saying and the committee is saying 2 years ago, and ask what changes in the bill that you would recommend, and not with any sharpshooting intent, just what general changes you would suggest to bring it into line with what I would believe is your thought about an auditing approach?

Governor BABBITT. Mr. Chairman, I would today stand on most of what is in that letter, and much of it is reflected in this bill—the stripping out of non-safety-related adjudications, the move toward a hybrid adjudicatory process. Those issues——

Senator SIMPSON. You like that idea?

Governor BABBITT. Yes, sir.

Senator SIMPSON. The hybrid process?

Governor BABBITT. Yes, I do. I think the issues that we discussed in that letter are in many ways reflected in this bill, the feeling that the process in its current form has rippled outward to the point too much time is spent on issues where there has been no threshold showing of the need for adjudication, and I think this bill addresses those rather nicely. The one-step design and licensing procedure I think reflects a consistent position.

I am open to charges of being, which I would never make but would only suggest, of——

Senator SIMPSON. No charges.

Governor BABBITT [continuing]. Of being somewhat inconsistent on this management issue. I have changed my position largely, Senator, as a result of the——

Senator SIMPSON. George Mitchell and I have never changed our positions.

Senator MITCHELL. At least not this week.

Senator SIMPSON. No, I want to hear the remainder of that response and then I am going to go vote and I will return so Senator Mitchell can vote. But I would hear the rest of that response.

Governor BABBITT. Senator, during the intermission I would love to have a copy of the letter to refresh my recollection.

Senator SIMPSON. It is an important letter to us because we took a lot of faith in some of the things you are suggesting there.

Governor BABBITT. I would say the one place I have personally changed my view is on the inadvisability of locking in these management issues at that single-step hearing and having just an audit afterwards. Why have I changed my position? I am really dismayed at the lack of any discernible signs of progress on these operational issues in the industry. With the passage of each year, there has been very little indication that there is improvement.

Senator SIMPSON. Do you think the lessons learned aspects haven't been learned by the industry as you pursue it and perceive it?

Governor **Babbitt**. Certainly some of them. There have been some very valuable changes in the education, training, licensing. The evolution of ENPO has certainly been a major victory. A lot of technical issues, there has been some progress.

Senator **Simpson**. Well, I must go vote, and thank you so much. I really appreciate your coming, Bruce.

Senator **Mitchell** [presiding]. No intermission, Governor. We do this in relays.

Is this bill necessary? Is any bill necessary?

Governor **Babbitt**. Senator, I think a proper bill would be good for this reason: The Commission has the legal authority to make 99 or even 100 percent of these changes. The Commission is caught in a murderous crossfire between opposing forces out in the public, in the industry and on Capitol Hill, and in many seasons it seems as if Commission members spend more time meeting with the industry and trotting back and forth to Capitol Hill trying to set some kind of compromise in this crossfire. It is for that reason that I believe that there ought to be a congressional mandate on these procedural items. If not, they are going to get just cut to shreds in the controversy over any changes.

Senator **Mitchell**. Governor, I don't have the background that you do in this area. I come to it fairly late. Leading up to these hearings there appeared to be, I won't use the word consensus but a considerable body of opinion which suggested that the very lengthy delays in the licensing process were the fundamental cause of the problems that the industry is now having and that a streamlining of the licensing process would contribute to a reversal of the situation which has existed for the last several years in which no new orders have been placed and existing orders have been cancelled. However, throughout these hearings that view has not found substantial support in the testimony of the witnesses before us. While there is clearly disagreement on that, there appears to be emerging a somewhat different view that the problems are much more complex than that, that the reasons for the delays and other difficulties that the industry is encountering lie beyond the licensing process, and that passage of this bill tomorrow isn't really going to make any difference, this bill being either of the bills before us. Are we fighting the last war here in a matter that has no relevance to the current situation?

Governor **Babbitt**. Senator, I think it has relevance. The delay, in my opinion, is a red herring. The utilities who have been good at their job have gotten through the process. St. Lucie is an example. The Palo Verde units in my home State are another example. The process works for those who are really competent.

When we wrote that letter a couple years back talking about the licensing process, our concerns were, I think, headed in a different, not delay but the use of Commission resources. It was our feeling that the hearing process as currently structured had given rise to hearings where the public policy and politics of nuclear power were being endlessly thrashed out through a variety of thinly disguised vehicles that were being raised by people that, shall we say, were very imaginative in their use of the American penchant for due process plus 10, and the Commission was being distracted and that the staff was being burdened with an awful lot of issues that were not very close to the core safety issues. That is I believe the concern that is reflected in that letter we wrote.

Senator MITCHELL. I have great respect for your knowledge and views in this area and I am interested in your statement because I have previously been included to the view that we ought not to abbreviate the hearings unduly for fear of losing some substantial contribution to the safety process. I guess what you are saying is people who are basically opposed to any form of nuclear power have used the hearing to provide maximum safety as a way of delaying or defeating the project.

Governor BABBITT. Senator, I am relucant to say that, but I believe it and will say it. The answer is yes. The process, the use of the licensing boards, it has become Byzantine in its complexity, and the litigants and the courts have simply built up an overlay of procedural devices that really, in my opinion, threaten the Commission's ability to address the real issues.

Senator MITCHELL. Have there been any benefits that have accrued as a result of that process which will be lost when we move to deal with the problem that you have suggested?

Governor BABBITT. Well, obviously there is a trade-off involved. It seems to me that we have to be very thoughtful and cautious as we move to kind of whittle this thing back around the edges. I am not an expert on procedure, but the hybrid process strikes me as an correct concept. I am not prepared to voice any opinion as to the specific application in the language of the Commission bill, but I do support the approach.

Senator MITCHELL. Governor, on another subject, you have stressed the management capability as a key to the current situation that is not addressed by the bill. I think you said it is missing the mark or missing the main problem. You acknowledged indirectly at least in your remarks the difficulty of making judgments in an area as subjective as management ability. Could you briefly describe the manner in which that is now considered by the Commission, if at all, and whether or not you have in mind any mechanism that could be written into the law, any criteria that would enable what is admittedly a serious one but one difficult to put down in specific legislative language that might be of assistance to us?

Governor BABBITT. Senator, I think it is fair to say that at the time of Three Mile Island these issues were generally not considered. The Commission viewed it as something that it had a tenuous mandate or no mandate to deal with. Since that time there has, I think, been increased attention. You see it particularly in the register of NRC fines. If you go through that long list you will see a real trend toward specific action relating to management problems. The Brunswick plant down in the South is an excellent example. It is a difficult problem. We spent a lot of time in some of these hearings looking at the airline industry. It is a fascinating contrast, equally crucial safety issues. If you go to Boeing or Adler or McDonnell Douglas in St. Louis, you will find the regulation is done by an FAA inspector who is an employee of the Boeing Aircraft Co., who writes to the FAA and gets back a certificate saying you are the inspector. It is regulation with the fox guarding the hen house, and it works. It is enormously effective. What do you learn from those things? I suppose that is the subject for another today. They are very subtle and difficult questions that relate to cultural factors, if you will.

OK, what would I do in this bill? I would not set the bill aside. I would draft in two provisions. No. 1, I would draft in a paragraph saying within 30 days of receipt of any application indicating a desire to build a nuclear power plant there will be a summary-style determination, not a full public hearing unless you desire that. There will be a finding by the Commission that there has been a review of the utility, its management record——

Senator MITCHELL. I wish you would finish the answer because I will read the transcript. I have about three minutes to go over and vote. But I wish you would complete it even though I have to leave and not hear it.

Senator SIMPSON [presiding]. Yes please, Bruce, go right ahead.

Governor BABBITT. Senator Simpson, Senator Mitchell said to me, well, do we need the bill? I explained yes, I think a bill is warranted. I would specifically draft in two paragraphs. One would require at the front end of the process, when a utility signals its intention to go into the nuclear business, I would require a nonadversary, a summary process in which the Nuclear Regulatory Commission makes a preliminary finding that the utility has generally the requisite financial strength, management background, and overall level of competence to enter the process. I would not surround it with large, elaborate hearings, but I would require that the Commission address those issues and make a summary finding. I would then leave section 185 in the bill primarily for its validity in the design and construction process.

The other change I would make would be to add a paragraph making it clear that although there is no longer an operating license stage, there is a requirement that the Commission, prior to startup, have a dress rehearsal review of the nuclear operating team and its suitability to wrap its arms around that plant.

Senator SIMPSON. I appreciate your suggestions. These are important to us because you have, as I say, a great background in it and that is helpful for you to give specific suggestions. I think that I will just conclude my questioning, I appreciate having you here, and I hope, as we move along with this, that you will continue to share with us your views on it. It is very important with the work you have done in the past with the Kemeny Commission and the the Nuclear Safety Oversight Committee. That will be very important to us.

Governor BABBITT. Senator, thank you very much.

Senator SIMPSON. Thank you very much, Governor.

Next, Mr. Nicholas D. Lewis, chairman, Energy Facility Site Evaluation Council of the State of Washington.

STATEMENT OF NICHOLAS D. LEWIS, CHAIRMAN, ENERGY FACILITY SITE EVALUATION COUNCIL, STATE OF WASHINGTON

Mr. LEWIS. Mr. Chairman, I am Nicholas D. Lewis, Chairman of the Energy Facility Site Evaluation Council, State of Washington. I will summarize my testimony for you and perhaps add a comment or two.

I would say at the outset Governor Spellman has specifically authorized this statement and my appearance before the committee today. We are glad to be of assistance to you in the committee.

Senator SIMPSON. Thank you.

Mr. LEWIS. The State of Washington has presently seven nulcear projects in various stages of the application and construction process under our jurisdiction. In addition to that, we have two additional nuclear plants which I participated in State licensing activities for which were not licensed by the Federal Government and were subsequently withdrawn by the utility.

I am not sure as the chairman of the State licensing body for the State of Washington, that is responsible for the now nationally known WPPSS situation that I should be advising the Federal Government on licensing reform, but, nonetheless, I shall proceed.

I would give the existing NRC licensing process a mixed verdict. I think, as I said in my written testimony, that the process is somewhat predictable: It is predictably lengthy, complex, legalistic, and often in controversial situations nondecisive. I think that if there is to be licensing reform and hearing reform that much of what is required, Mr. Chairman, is improved management of the licensing process within the Commission. And I would certainly endorse many of the comments made by Governor Babbitt of Arizona regarding improved management, both for utilities and of the NRC itself.

Concerning the effective opportunity for public participation, as I note in my written comments, if you are well financed and have a battery of lawyers you do pretty well. If you are an ordinary citizen, you are lucky to find the right room, at the right time, on the right day, much less to find the right place to sign up. You can imagine the level of anxiety and of trauma that attended my recent appearance at the direct instruction of the Governor before an Atomic Safety and Licensing Board hearing in Washington State where we made a very pointed statement only to receive the order produced by the hearing Board a few weeks later where neither the content nor fact we appeared was noted in the order. As I note again in my formal testimony, we have now commissioned the Attorney General's Office of the State of Washington to prepare all of the legal documents and papers and appearances and everything else that will be necessary because the fact I took the Governor's plane and went to the hearing didn't seem to matter and now we are goinq to have to bring our lawyers into it, and the public will pay for that, and pay and pay.

I think the quality of the NRC decisions ultimately has been pretty good but very long in coming. One of the management problems we have found with the Commission out on the west coast is, too often, decisions are being made at a great distance, in this Washington for our Washington, by Atomic Safety and Licensing Boards who, quite candidly, do not know the name of the city they are meeting in, much less than anything about the local situation. A great deal of ignorance on Atomic Safety and Licensing Boards is troublesome to a State official who is deeply concerned about the impact of a plant on his State, his environment, his people. I think as the Commission devotes more and more effort to delegating their decisions to regional office and onsite representation we will see an improvement in the decisionmaking process, not only in terms of time but in terms of quality.

There are several additional things I would like to note, as I indicated in my formal comments. We have entered into a formal set of agreements between the State of Washington and the U.S. Nuclear Regulatory Commission for the preparation of joint environmental impact statements. We have actually done that twice now. We have also entered into a landmark agreement for joint hearings so the same set of witnesses instead of appearing at hearings on separate dates in separate rooms, once before the State hearing board and once before the Federal hearing body, would appear once in the same room before both hearing bodies so we don't have confusion and waste of resources. This effort I must emphasize, however, took months, and months, and months of work and only happened because the Commissioners themselves and the very senior staff of the Commission were willing to endorse it.

Several specific matters in the bill, Mr. Chairman. We note in our written testimony the need for power issue. We think States ought to be in the best position to determine not only whether there is a need for power but whether nuclear represents the best source of generating capacity. The NRC bill goes through an elaborate process of making us show that our need for power analysis is a correct and proper one. If you want efficiency in the process, as I note, delegate that to the States and let the States use the processes that they have in place. We happen to be a member of the Pacific Northwest Planning Power Council. We have a process in place. I don't think we ought to have to justify that to the Commission, quite candidly.

ENVIRONMENTAL ISSUES

Neither bill speaks specifically to the participation of State government in the environmental site-related questions concerning these projects. These projects are within a State. They are within a State that has a qreat deal of expertise concerning environmental questions, site-related questions. Why these questions should be second-guessed by the Federal Government at a distance is beyond me when this level of expertise is available locally. I have seen NRC licensing proceedings that have not a one single reference to the fact that the State of Washington engaged in months of detailed analysis of the environmental aspects of a site. I note the State of Washington issues both the water quality and air quality permits under joint Federal and State authority. Yet we will have Federal hearings that go on at length concerning water quality.

I think it is our view that the delegation of environmental and site-related matters to States willing to take that responsibility will be a major step in the direction of reducing licensing duplication, and I believe time, and leave the NRC to focus their attention on the very important health and safety questions for which they are competent and knowledgeable.

STANDARDIZATION

I think you heard much on that this morning. I would only emphasize again we believe very strongly the standardized plant designs offer a great potential for reducing not only hearing time but the cost that result in these plants.

My final comment, Mr. Chairman, is we need to ask why are we building nuclear powerplants? We are not doing it to increase the employment for design architects and engineers. We are not doing it to experiment with new design. We are doing it to provide reasonable cost power to the ratepayer citizens we serve. I believe that is the bottom line.

Senator SIMPSON. Well, you have said that rather crisply there. I appreciate your sharing your sincerely held views on that. And indeed I did hear you say that the NRC process has become lengthy, complex, legalistic, and in controversial situations nondecisive, and you cited an instance. Are there any other particular incidents you would share with us as to how you came to that opinion?

Mr. LEWIS. Well, I think every single atomic licensing safety board that has entered our State has given me some example to share with you. I believe that, to be very candid, Mr. Chairman, that improved management by the Commission of their hearing process is one of the most important steps that could be taken to reduce the time and the expense of hearings while preserving the essential things that need to be done. The Commission itself can no longer turn over to hired hands a hearing process that they pay no further attention to and only take up when it is completed. And I would note, Mr. Chairman, and be very candid, the level of business with the Commission is falling off and those people engaged in the process of conducting hearings are very smart people. I am finding a tendency for them to lengthen the hearings out because there is not another project down the road. It is an important fact the Commission is going to have to deal with. In my own State we have used hearing examiners and we have a bad experience with it. In the most recent licensing proceeding, Mr. Chairman, we have ejected our hearing examiners from the process and my council has determined it is going to hold the hearings itself. I am not suggesting the Commission do that, but I suggest they manage their hearing boards.

Senator SIMPSON. So you really believe that with the force of personnel that they have, the present situation with regard to the industry and various things we all know are taking place with the rocky condition of the nuclear industry, that they are finding things to do in the process to extend their vision, their visage, and employability?

Mr. LEWIS. I hate to generalize because there are some in the Commission for whom I have great respect and who would never stoop to such things, but I believe that is a general tendency and it is certainly a danger. It is a very real danger. I would also note there is a historical tendency on the part of the Commission to employ part-time hearing board members who have to schedule hearings along with lots of other things they do. It is very easy to take 4, 5 weeks' worth of hearings and spread it out over a 6-month period when you are trying to do that.

Senator SIMPSON. What do you think of the hybrid provisions in these two bills, knowing that you say you felt the disadvantage of nonlegal participants in a highly legal process, and the hybrid proceeding here seeks to minimize the legalistic nature of the NRC proceedings while at the same time insuring that adjudicatory procedures will be available to resolve substantial issues or disputes of fact. What do you have to share there?

Mr. LEWIS. I believe that that could well be an important step forward. I think it is very important to provide every opportunity for public participation and for early identification of issues. I do not think that requires a formal legal hearing process to do it. I would agree that there will be times when there are issues in such dispute and of such importance that they will require the discipline of a formal hearing process. The hybrid approach gives both of those possibilities.

Senator SIMPSON. Let me ask you this because you come from a State with a regional power planning council. Is there sufficient provision in these two bills where we authorize States to make the need for power and the source of generating capacity decision? Is there sufficient flexibility and authority here to enable a regional planning body such as the one that your State is a member of to make these decisions?

Mr. LEWIS. I believe the bill presented by Secretary Hodel certainly has that flexibility. I am not certain the bill presented by the Commission if interpreted in a stringent way does, it is conceivable they could decide our regional power planning process doesn't qualify.

Senator SIMPSON. You briefly touched on confusion or duplication of a State like Washington which currently undertakes activities of need for power, source of generating capacity, and a broad range of environmental and site-related matters. Are there other areas in which the same task is being performed at both the State and Federal level without increase in the ability to assure the public health and safety but at great cost to both entities?

Mr. LEWIS. Well, I think I hit most of them. Clearly, the emergency response area would be another one I mentioned in my testimony, where the primary responsibility is that of State government without needing a great deal on the part of the NRC to look over our shoulder and tell us how to do that. I think we are perfectly capable of judging how to insure the safety of our own citizens.

Senator SIMPSON. Well, my final question, we perceive that much is being proposed in these two bills that could be accomplished by the NRC through administrative changes. From a State standpoint, what advantage is there of addressing those issues in legislation rather than through administrative changes?

Mr. LEWIS. I would share the views of others expressed here today, Mr. Chairman, that I do not believe the NRC is going to be able to accomplish those regulatory changes. I think the clear direction from this Congress would not only be highly advised but necessary. I think that I, as a State official, when I get clear direction from my legislature, it certainly stiffens my backbone and helps me understand what the policy directions are. I think it is time for a new statement of congressional intent.

Senator SIMPSON. I think that may well be true. Thank you very much. I very much appreciate having your particular views, Mr. Lewis.

Mr. LEWIS. We very much appreciate the invitation to be here today. Thank you.

Senator SIMPSON. Thank you.

Now, Peter A. Bradford, committee on electricity. What is this committee? Committee on electricity, National Association of Regulatory Utility Commissioners. Nothing about Maine.

This is not your first time in this Chamber, is it?

STATEMENT OF PETER A. BRADFORD, COMMITTEE ON ELECTRICITY, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. BRADFORD. No, sir, indeed.

Senator SIMPSON. Indeed not. It is good to see you and I will have to get with you and find out how your fly-fishing activities are.

Mr. BRADFORD. I think I learned a good deal on that from you, as well as shirt purchasing.

Senator SIMPSON. Yes, we did share information on that. When you have a wingspread of 38, you do share information.

We appreciate having your thoughts on this, with your background as an NRC Commissioner and a great attentiveness to this area, and so do give us your views.

Mr. BRADFORD. I appear before you today as chairman of the Maine Public Utilities Commission, also chairman of the National Association of Regulatory Utility Commissioners [NARUC] subcommittee on nuclear issues of its electricity committee. I am also a former Commissioner of the Nuclear Regulatory Commission and, as you have observed, Senator Simpson, in that capacity I have appeared in this room frequently.

I appreciate the opportunity to renew acquaintances with this subcommittee and with nuclear licensing issues. Today's hearing will represent something like the 20th time I have testified before the Congress on issues relating to nuclear licensing reform.

These past hearings divide themselves roughly into two groups, one, the Nuclear Siting and Licensing Act of 1977, 1978, and 1979, never enacted, and the other surrounds what came to be known as "The Great Licensing Delay Hoax of 1981." So today's hearings are part of the third major congressional review of the NRC licensing process in the last 6 years.

It is important to keep in mind one other and more distant piece of history regarding the NRC licensing process. The current NRC adjudicatory hearing process was developed as part of a bargain from which the nuclear power industry gained a great deal in the late fifties. In return for accepting extensive Federal hearings, the industry was exempted from any State or local regulation of radiological health and safety and received also the limitations on liability that are set forth in the Price-Anderson Act. Thus, citizens in any community in which a nuclear power facility was to be located—a facility with a remote but not nonexistent chance of destroying the community—gave up both local regulation of the facility and the additional financial and safety assurances that either State regulation or normal insurance industry operations would have brought, assuming that insurance coverage would have been available. In return they got a commitment to the full panoply of trial-type procedures as part of the Federal licensing process. Now that memories have faded somewhat, the industry is seeking to revoke its share of the concessions in that original bargain. To point this out is not to say that the licensing process must forever remain unchanged in all respect. Still, it is an important history in the context of changes that would significantly reduce public participation in future nuclear powerplant licensing proceedings.

Putting history aside, let me note that I am appearing today on behalf of NARUC. NARUC has a diverse membership. It has passed no resolutions concerning either of these two pieces of legislation. I have circulated the points that I intend to make in the rest of my statement to the members of the Nuclear Issues Subcommittee that I chair and have heard no objections. However, you should be aware that there may be other commissions that will not concur completely in the points that I am about to make. NARUC at this time neither endorses nor opposes either of the bills before you but would ask you consider the following points.

NARUC's primary involvement with nuclear energy comes from the fact that many of its member commissions regulate electric rates. As a result, NARUC has a strong interest in the reliability, predictability, and economy of nuclear power. We also have an interest in being sure that the nuclear regulatory process produces neither procedural nor substantive results that discredit utility regulation in general. Furthermore, many of our members play a major role in setting State electrical energy policy and, as such, we have an interest both in having a nuclear option available if we need it and in being able to participate in a fair and efficient nuclear licensing process.

As economic regulators, NARUC members are interested in holding long-term costs down, but we have seen far greater cost impacts from nuclear mishaps such as Three Mile Island, steam generator tube degradation, WPPSS, quality assurance failures, and construction cost overruns than from the NRC licensing process.

From our standpoint, what nuclear energy needs most is a prolonged period of accident-free and fiasco-free operation of the plants now in service and those to be licensed soon. The present readjustment from the rush of the early 1970's to license hundreds of reactors while commercializing breeders and reprocessing provides a welcome opportunity to address such issues as waste management and the stabilizing of both the technology and its regulation. Efforts to stimulate artificially a demand for new reactors through legislation or public relations campaigns or subsidies are at best a mischievous distraction and at worst a harbinger of future shortcuts and trouble.

We are under no illusion that the problems of nuclear power can be solved by licensing reform legislation. Indeed, the wrong kind of "reform" would only increase public skepticism and thereby make matters worse. The fact is that our current licensing process has licensed more nuclear capacity than the French, the Japanese, the Germans, and the Soviet Union combined. Furthermore, contrary to a popularly held myth, the public hearings aspects of the licensing process has never delayed a single nuclear powerplant's operation by 1 single week. Indeed, one reads the many pages of industry, NRC and DOE testimony before this committee in recent months in vain for a single specific illustration of a licensing delay—or an unnecessary backfit—that this legislation would cure.

We do not mean to denigrate the efforts of the drafters of S. 893 and S. 894 to produce useful changes. Both early siting and standard designs are potentially useful measures in the event that orders for nuclear reactors should one day reoccur. However, it is important to note that these measures can, as was pointed out in previous years, be substantially encouraged within the NRC's existing statutory authority. Indeed, NRC regulatory provisions exist to encourage both. The modifications needed to expand this authority are relatively minor ones and do not require the other provisions that are presently before you. The same can be said of the commendable desire to require that much or all of the plant design be available at the time of construction permit hearings. This provision, however, would not eliminate the need for operating license hearings for reasons that I will discuss in a moment.

I should also note that because we believe the safety of nuclear powerplants and the credibility of the nuclear licensing process to be essential to the economic viability of nuclear power, we would not support those aspects of the pending DOE legislation, which I take to be S. 894, that limit the ability of the NRC to make needed safety modifications to existing plants or that curtail the ability of States or citizens to participate in hearings at the operating license stage on significant safety issues.

In addition, we feel that this legislation would be more balanced and more responsive to the real public concerns about nuclear power if it addressed such items as the need to raise the liability limits in the Price-Anderson Act from their clearly outdated 1957 levels, the need for a safety issue resolution process at least as firm as the NRC's commitment to meeting licensing deadlines, the urgent need for accurate need-to-power assessments, and the unanimous recommendations of the Kemeny Commission and the NRC's own post-TMI Special Inquiry Group for the provision of a public counsel's office or other assistance to intervenors and intervening States in order to better focus their concerns on genuine safety and environmental issues.

In this regard I should note, on my own behalf, that DOE's attempt to use the Kemeny and NRC post-TMI investigations in support of S. 894 is a breathtaking perversion of both of these reports. The fundamental message of both documents was that the NRC should emphasize increased safety above expedited licensing and that licensing reform, any licensing reform, should include, as a high priority, assistance to responsible intervenors whose contentions were effectively stifled by inadequate resources. Neither the DOE nor the NRC legislation reflect these priorities.

It is important to stress that NARUC's basis concern is with the economics of nuclear power. We have no extensive nuclear safety expertise. However, we do have extensive familiarity with administrative law, administrative processes, and public concerns regarding energy issues. Against this background, we feel that it is important to stress that the NRC hearing process ranks very low among the issues that have brought nuclear power to its present situation. NRC hearings did not cause Three Mile Island. NRC hearings did not bring about the cancellation and default at the WPPSS units.

NRC hearings had nothing to do with the quality assurances breakdowns at Diablo Canyon and Zimmer. NRC hearings are not even at the bottom of the cost overruns at Shoreham and Seabrook. Indeed, when a unit such as the recently completed St. Lucie plant in Florida avoids the problems that have bedeviled these other units, it is clear, as Senator Mitchell suggested to Secretary Hodel on May 26, that the NRC hearing process in isolation is not a source of delay at all.

The NARUC member agencies are fully familiar with the problems of using trial-type procedures to resolve complex issues of law and fact. However, we also recognize that centuries of Anglo-Saxon jurisprudence have provided no better ways to deter or detect the false or misleading testimony that some witnesses from all sides may attempt to use.

Most of nuclear energy's real problem situations would tend to support the proposition that, if anything, the NRC process of nuclear surveillance has been too lax rather than too stringent. The problem that Congress should address first is not that the United States has licensed too few plants too slowly; it is that we have licensed and made large financial commitments to too many plants too quickly. That is why we now have a landscape dotted with nine-figure cost overruns, a nine-figure accident, eight-figure cancellations, and eight-figure mishaps in such areas as steam generator tubes, pressure vessels, emergency plans, scram systems, and quality assurance. Significant problems have time after time been found after millions of dollars—hundreds of millions in some cases—have been committed to the powerplants. These are the types of situations that NARUC would like most to avoid in the future.

Backfitting, as distinguished from the NRC licensing hearings, is a serious problem for NARUC rate-setting agencies and for consumers because of its unexpected economic impact. However, we recognize that the backfitting process is, in most cases, an inevitable result of the rate at which the nuclear industry has grown. Given that most of today's plants were licensed on the basis of very little operating experience, the lessons of events such as the Brown's Ferry Fire, Three Mile Island, and the steam generator tube and quality assurance failures will have to be implemented in plants that are already built. This, of course, is a much more expensive process than going slowly with a few prototype units into a larger commercial utilization at a slower pace.

The Nuclear Regulatory Commission has made extensive modifications to its backfitting process in the last 3 years. Barring another major accident which would inevitably necessitate a rapid and somewhat chaotic response, the nuclear industry's legitimate concerns have already largely been addressed. Legislation in this area is not needed, and it would be an unwise contravention of the Kemeny Commission's warning against encouraging an NRC attitude that seemed to subordinate safety to powerplant licensing and economics.

NARUC would like the backfitting process to be as rational and as cost conscious as possible, but we cannot support an effort to put an arbitrary lid on it. To do so is to invite other accidents, and we have learned that the only thing more expensive than fixing the plants on the basis of engineering judgment and relatively minor operating events, as the current backfitting arrangements provide, is having to deal with the consequences of the more serious accidents.

The same points that we have made regarding backfitting can be made in general terms about the need for an opportunity for hearing at the operating license stage. If, as is not now the case, construction permits were based on complete design information, then the operating license hearings could be limited to significant new issues plus compliance with the construction permit. In this context, I think the current DOE provisions of S. 894 on res judicata and collateral estoppel are a commendable improvement on the DOE efforts of 1977, 1978, and 1979. However, one need only look at the number of plants—Zimmer, both Diablo Canyon units, and Midland—at which significant problems have come to light with the plants more than 90-percent complete to realize that operating license hearings cannot be eliminated simply because a design has been approved any more than, as NRC Commissioner Gilinsky put it, a college degree can be granted on the basis of freshman year registration. Furthermore, as noted earlier, these NRC hearings have never delayed the operation of a single nuclear powerplant for a single week, for they continue while the plant is being built.

In summary, NARUC supports those aspects of this legislation—early siting and standard design—that would have a genuinely beneficial effect on the nuclear siting and licensing process. However, we feel that legislation that singles out the NRC licensing process without addressing other more serious problems with nuclear power will ultimately send the wrong message to both the public and the nuclear industry. We would therefore urge the deletion of the backfitting provisions, Mr. Chairman, the retention of operating license hearings, and the inclusion of the measures mentioned on page 7 above.

Let me reiterate my gratitude and that of NARUC for the invitation to testify on these important issues. NARUC does support a balanced reexamination of the nuclear licensing process so long as it does not undermine either the incentives for safe and reliable operation or the basis for renewed public confidence that public concerns are being fairly and thoroughly dealt with. To the extent that the foregoing testimony relates directly to that concern, I feel confident that I speak for the overwhelming majority of the NARUC membership. Since the give-and-take of the question and answer process allows less time for reflection on the likely NARUC consensus, I think that I should indicate now that my answers to your questions should, to the extent that they cause alarm, be regarded entirely as my own.

Senator SIMPSON. Your answers never cause alarm except sometimes to the chairman, as I remember. Would you say that was true?

Mr. BRADFORD. Well, to the chairman and one or two of my other colleagues, usually true.

Senator SIMPSON. That is true. I do recall several shudders at times.

Let me ask you this. Your group, in previous testimony here, has offered extensive comments to proposals to extend greater authority to the States to make decisions on issues such as need for power and alternative sources of generation, and your group strongly supported those provisions. Could you then give us your thoughts on both of these bills as they attempt to extend greater authority to States in these areas?

Mr. BRADFORD. I think these bills are very similar to the earlier bills NARUC testified to on this regard, at least as to need for power determinations. The other provisions that I think we have supported in the past having to do with joint hearings and other environmental issues I don't believe are addressed in the same way in this legislation.

As to need for power issues, we would like very much to see the State commission certificates of convenience and necessity be the definitive documents for those determinations. We feel we have the expertise in that area, that the NRC does not. To the extent, though, that the National Environmental Policy Act requires more than that, that is, requires a balancing in ways that the States commissions don't perform it, I suppose the most we can ask is our conclusions be woven into the process that NEPA mandates. Alternatively, we can through joint agreements with the NRC endeavor to make the overall NEPA balancing. There is an overall dilemma in that actions that satisfy NEPA are not normally reviewable in State court, whereas actions that satisfy NEPA tend to be reviewable in Federal courts. Therefore, the Congress would have to decide where it wants a State action to be reviewable. It is within your power to do.

Senator SIMPSON. I didn't realize you appeared before Congress some 20 times in the past.

Mr. BRADFORD. Twenty times on licensing reform.

Senator SIMPSON. On licensing reform?

Mr. BRADFORD. Between the Siting and Licensing Act of the first 3 years of my term on the NRC and to the extent those issues were discussed in authorization and appropriation, 20 is about right. Remember, there are some six committees with jurisdiction over the NRC on a regular basis, plus others that assert it occasionally.

Senator SIMPSON. That is the grisly thing I found out since I came to the Senate. If there were one committee in the House chaired by Mo Udall, it would be marvelous. But there are not, there are six of them, and it really makes it an appalling spraying of authority and jurisdictional effort and it is not good. I, certainly, am not seeking to preserve all things nuclear here. The Energy and Natural Resources Committee of the Senate has worked diligently to help us draft the nuclear waste bill. That is fine. I look for all the help and support I can find, either side of the aisle here, as long as we are on the same intent of not trying to set out to create new things to do. That is a problem, indeed it is.

But in the process of that you made statements over the years about the issues as you have observed them. At one time, and I remember this, you said that a hearing, in additional to dispute resolution, that a hearing should provide a strong and skeptical independent check on the NRC's internal layer of review, beyond that undertaken by the staff. This morning we heard testimony from the Ad Hoc Advisory Committee. They were unanimous in the view that the hearing should be limited to resolution of disputes between parties and the NRC's proposed legislation that includes a finding to that particular effect.

Let me ask you, then, what purpose is served by the licensing board functions as an independent check on the NRC staff work, and could that function be better served by the Advisory Committee on Reactor Safeguards?

Mr. Bradford. I had intended the statement that you quoted to mean that the hearings themselves, the fact witnesses would have to withstand cross-examination was an independent check in a sense it was an independent check from NRC management. I think hearings serve that purpose and it is a very important function of theirs. The NRC review process and the applicant review process would just be more careful if they know they are going to face testing by attorneys and expert witnesses for other parties at some point down the road, and I think that is very healthy. Your reference as to independent ability of the board members in those hearings to raise safety concerns of their own, that isn't what I had in mind when I said the independent hearings served a valuable purpose. I do think the ability of board members, two of whom are technically trained and one of whom is an attorney, to raise issues independents is a useful tool to have. And it doesn't occur very often and it certainly hasn't been a major source of delay. It does tend to. If we have a nuclear physicist and an engineering specialist sitting on the panel who feel an issue isn't being addressed by the party, it does seem to me it would be useful to have them ask a party to address it without having them go in the forum of the dispute resolution mandate that overlays the proceedings. Certainly if it got out of hand and every member felt free to introduce dozens of new issues into the process that would be a problem. At the moment—I am 15 months out of touch. It was not a problem at that time.

Senator Simpson. If those hearings are to serve as a forum for independent audit by the licensing board, doesn't that essentially mean that those hearings should be mandatory at both the construction permit and operating license stage, whether or not even requested by the public, in order for the licensing board then to perform this independent analysis?

Mr. Bradford. As a practical matter, the hearings at the operating license stage have been granted whenever they have been requested as far as I know in the cases that I know anything about. I don't think that there is much to be said for convening a hearing if there is no party requesting one because, as I say, the additional check that the board members themselves impose has not been a significant factor in the past and I don't think it would be worth convening a hearing simply to have the board members review the work that had been already done. Indeed, that is a proposal in the construction permit stage, too.

Senator Simpson. Let me ask one further question and I know Senator Mitchell may have some questions.

Here is an issue that is of qreat interest and concern to me throughout these hearings. I would ask you a question about the connection between the licensing process and quality assurance, because in discussing plants, the ones that get the glimmer of attention—Zimmer, Diablo, Midland, others—and you yourself suggest in your testimony that we might be better served if we were to focus on the quality assurance problems of those plants and others rather than on reforming the licensing process, that is a point which seems to imply that the quality assurance and the licensing are separate issues. Isn't it possible, and this is my thought, that by encouraging a more complete design information at the initial stages of construction, more percentage shown to the NRC before receiving the construction permit, by providing some assurance to applicants that once an issue is resolved by the Commission, it will not be constantly revisited, that we will minimize then what I have referred to as "design as you go," which is certainly the present approach to reactor construction, which can't help but lead to problems of quality assurance? What is your thought on that?

Mr. **Bradford**. I think that is, if I have understood you correctly, that is absolutely right. That is, a licensing process that drives the applicant to produce an 80 percent or a 100 percent or standardized design at the beginning will certainly cut down on problems of quality assurance and monitoring later on if you make one major assumption: If a similar plant doesn't have an accident while that plant is being built that forces modification. There is no question that changes have to be made while a plant is being built or tearing out things that have already been built. Changes in design that have been reviewed and improved internally give rise to potential problems. The less of that, the better. It doesn't suggest to me there shouldn't be an opportunity for a hearing at the end as to whether the plant has in fact been built consistently with the approvals that have been given at the beginning and as to whether there is reasonable assurance that its operation can be carried out safely. Also, there are some issues, qualification of personnel, that just can't be dealt with at the beginning of the licensing process.

Senator **Simpson**. Well, I thank you. That is helpful.

Senator **Mitchell**. Thank you, Mr. Chairman.

Well, Mr. Bradford, I commend you on a very thorough and I think effective statement.

One of the subjects of this inquiry concerns the value of adjudicatory hearings or what we have come to describe as hybrid hearings, which is a way of saying with respect to some issues less than fully adjudicatory, and I think that this hearing process demonstrates the value of that. We get witnesses sequentially who come in one at a time and leave and when there are direct contradictions it is very difficult for us to engage in the kind of cross-examination and direct confrontation that is, of course, the essence of the adjudicatory hearing. That struck me as you were reading your statement, particularly on page five where you said that—

> Contrary to a popularly held myth, the public hearings aspects of the licensing process has never delayed a single nuclear powerplant's operation by a single week. Indeed, one reads the many pages of industry, NRC and DOE testimony in vain for a single specific illustration of a licensing delay that this legislation would cure.

I think it is fair to say that much of the testimony in support of the legislation has been predicated on an assertion that is directly contrary to that. Indeed, you heard Governor Babbitt here today in effect make the opoosite statement.

With that in mind, do you have any objection, I assume you don't since your testimony is in public, if I ask the staff to send a copy of this statement to every witness who has suggested that hearings cause delay and ask if that witness can provide specific evidence documenting that assertion?

Mr. **Bradford**. No, I would be delighted. It may be some of the witnesses have illustrations that they haven't presented to you. But I think I have read all the testimony, not all the transcript, but all the prepared testimony you have heard, with the exception of what you heard today.

Senator **Mitchell**. Well, it is certainly possible because I have not been at every hearing. But I think that would be useful to have in the record.

Would you comment on the value of adjudicatory hearings, the necessity, if any, in your mind of going to hybrid hearings, the value there would be in that or what loss there would be in the present process?

Mr. **Bradford**. As one who has presided at more adjudicatory hearings than I would like to remember, although perhaps not as many as you, I know they take more time than informal hearings. But I think the formality of the testimony under oath, the availability of the discovery beforehand, the availability of detailed cross-examination, has a tremendous effect not only in clarifying the issues that are before the panel but in influencing the conduct of the parties in advance of the hearing. It just has to be the indication, and indeed I have heard said within the NRC staff that one of the considerations that they deal with in going through their reviews for the operating license hearings is whether their position will be sustainable under cross-examination at the time when they have to defend their decision to issue the operating license. So it has a salutary effect in not only producing a good record at the hearing but on the conduct of the parties, and months in advance, if they know they are going to be tested rigorously at the end. Those are the two primary benefits: That the decisionmaking body gets a better record and the parties' behavior is better in advance.

There is a temptation to say of the hybrid hearing, sure, that is a reasonable course, that is, of course the Commission will make adjudicatory procedures available when needed but can use less formal procedures for less complicated issues. But there are a number of difficulties with that. There are difficulties of timing. That is, it is hard for a party that hasn't had the kind of discovery that would indicate cross-examination is needed at a later stage. It is also true that the NRC's past conduct in areas where it had had discretion as to the choice of hearing procedures available to it just doesn't inspire confidence that they would use the discretion with regard to hybrid hearings prudently. By that I mean it is an agency that has been reversed frequently, and sometimes stingingly, by the court of appeals for procedural decisions. One of its most senior licensing board examiners resigned in protest a year ago—this pertained to the Indian Point hearing—because he felt the Commission was being flagrantly insensitive to the due process rights of the parties in Indian Point. The witness, Mr. Lewis, from the State of Washington indicated a few minutes ago the difficulties he has been having with the conduct of the hearing boards. There are some outstanding members of those boards, but there are also some members whose conduct is less than fully outstanding when measured against the standards of administrative due process. It is just not an agency whose past record inspires my confidence that they would handle the hybrid hearing discretion in a manner that would not tend to further disadvantage the citizen groups and, for that matter, State intervenors faced with the resources on the other side.

Senator **Mitchell**. Well, I thank you. Of course, if what you say is true, that the full public hearing process, and I assume that means the adjudicatory aspect of it, has not contributed to the delay, then there would appear to be no useful purpose served by abandoning that process in the name of expediting the process. We are talking here about streamlining and speeding up the process, and any solution to that problem, and proposed solution, at least implicitly, and in this case explicitly, has to be based on the assumption that you are trying to eliminate. If this has not contributed to delay, then it would not be necessary, would it?

Mr. **Bradford**. I think that is absolutely right. If I may, let me read one paragraph that I skipped in the interest of brevity. My original testimony describes what I called the Great Licensing Delay Hoax of 1981. That endeavor commenced with the purposed discovery by the industry and the administration that some 12 plants were facing licensing delays totaling more than 100 months—at an estimated cost to the national economy of billions of dollars and millions of barrels of oil. Despite the fact that the claims both of delay and of cost proved not merely to be inflated but to be utterly wrong, the NRC's temporary licensing authority (in a form much improved by the efforts of this subcommittee) was enacted by the Congress as a result of the hoax. In fact, no plant was delayed by the hearings from 1981 to today, despite the projection of a hundred months' delay, and the temporary licensing authority that the Congress conveyed on the NRC to deal with that problem has in fact never had to be used once.

So you have a pretty clear precedent in the past for people coming in here with broad claims of delay and in that case citing specific examples. But it turns out the industry's construction, for reasons having nothing to do with NRC hearings, slipped much faster than the projected delays in the licensing process, and all the plants to the extent some have not been completed to this day, to the extent they were completed well after approvals were ready. The only exception is Diablo Canyon unit 1. The day after they got their license, it was discovered the seismic unit for the unit has been placed in unit 2, and vice versa, and as a result Diablo Canyon hasn't been completed at all and it has not operated at all to this day.

Senator **Mitchell**. Now, on the question of backfitting regulations, it has been suggested that many of the backfitting regulations issued are arbitrary and capricious. Do you agree with that?

Mr. **Bradford**. Again, the industry which is in a much better position than you or I to come forward with examples simply hasn't done so. Mr. Lee of the Duke Power Co. cited examples where NRC cost benefit analysis had been proven insufficient. Even he didn't assert the backfits themselves were unnecessary. I don't know of any situation in which an NRC backfit has been proven arbitrary and capricious or unnecessary. I won't dispute there may have been some, especially in the months following Three Mile Island when people were trying to deal with a number of shortcomings that had clearly been shown to exist in reactors on an expedited basis, leaving the plants in operation. But the fact is in the years since Three Mile Island, and in response to the somewhat chaotic backfits that took place in the years following, the NRC has come down hard on the backfitting process. It reorganized the way in which backfittings are issued. They now have to flow through one office which was set up with the specific intention they were well coordinated, that they have cost benefit justification, that one didn't offset another in a way such that the two together might undermine safety. And the fundamental point there, there is nothing that Congress can require by legislation that the NRC hasn't in the last 2 years to make sure unnecessary backfits would not get imposed.

Senator MITCHELL. Then I will conclude by asking one more question. It is a question I have asked everybody. I usually ask it first. I will ask you last.

You have experience as a former member of the Nuclear Regulatory Commission and general experience in the field. Do you think this legislation is necessary?

Mr. BRADFORD. With all due respect to its sponsors and to those who have worked very hard, I don't think in its present form that it adds enough to the nuclear licensing process to be worth the Congress effort in passing it. It is not to say if you put together a bill that included some of the other measures I mentioned in my testimony you wouldn't have an overall worthwhile endeavor. But if your question is simply do I think the legislation as it stands now is worth the effort, the answer for me personally, not for NARUC, is no.

Senator MITCHELL. Thank you very much.

Thank you, Mr. Chairman.

Senator SIMPSON. Thank you, George.

But as you say, you still view that there are some things that even in your mind might be done?

Mr. BRADFORD. Yes, I think there is no question about that.

Senator SIMPSON. Maybe not in this vehicle or that DOE, NRC, but something in there and some things elsewhere that could be used to—I want to be sure and I say it again and again and I say it one more time. It is not my intent to streamline or spread the process. That is not why I am involved in these proceedings. I have lots to do without that. My mission is to try to restore some kind of effective process that has full public participation. In fact, the hybrid process, George, might even be more lengthy some have testified than what is happening now. That could be. But at least restore some kind of accuracy and stability to the process, some type of preciseness, not just whether it is going to take 10 years or 12 years or 20 years to get a license, but can we avoid the unpredictability that we presently have, get to standardization, to more design at the time of the initial permit. Those are the kinds of things that I am up to. That is the unhidden agenda. So I want to share that with you. Thank you very much.

Mr. BRADFORD. Thank you, Mr. Chairman.

Senator SIMPSON. Next Mr. Dan Mundy, who will be speaking on behalf of the Building and Construction Trades Department, AFL-CIO.

STATEMENT OF DAN MUNDY, LEGISLATIVE DIRECTOR, BUILDING AND CONSTRUCTION TRADES DEPARTMENT, AFL-CIO

Mr. MUNDY. Thank you very much, Mr. Chairman.

Mr. Chairman and Senator Mitchell, let me first explain why we had scheduled Bob Georgine and why he wasn't able to appear. Bob Georgine is a member of the Board of Governors of the Richmond Federal Reserve Bank. To our knowledge, he is the first member of the trade union movement to have served in that capacity, and as a result he doesn't like to miss their Board meetings. They had a meeting this morning and he was going to make every effort to get to this hearing. Knowing that he probably wouldn't, and why did we schedule him is because we think there is enough importance to this it would have been important for him to be here. Unfortunately, you are stuck with me.

Senator MITCHELL. Do you think they brought interest rates down?

Mr. MUNDY. That is one of the reasons we wanted to see him down there.

Mr. Chairman, I am Dan Mundy. I am legislative director of the Building and Construction Trades Department, AFL-CIO. I appear here today in response to the subcommittee's invitation to testify on S. 893 and S. 894, two bills to reform the Federal licensing process for nuclear powerplants.

The building and construction trades department does not believe we are out of the woods so far as energy supply is concerned. At the present time, oil and natural gas represents less than 10 percent of our national energy reserves, yet they represent nearly 75 percent of our energy consumption. This means we must import expensive and interruptible fuel, and we will have to import larger proportion in the future because our own production of these fuels has been going down. Conservation is an important part of the answer. Past experience shows, however, that conservation must not preclude energy production growth.

We are well aware of the relationship between an expanding energy supply and economic prosperity. Generally speaking, energy output grows faster than employment when industrial output and income is at a prosperous level. Since the number of American workers may grow at a 12-percent rate to more than 110 million by 1985—a rate twice that of the growth of the U.S. population as a whole—we can readily see the need for expansion of energy production.

In the light of this anticipated growth in the work force (and knowing that these new workers have already been born and must be provided for) the pressing question is: How do we go about conserving scarce energy sources while expanding our energy supply?

To answer, we must look to electricity, which has been our fastest growing type of energy. If we can eliminate the oil and gas now burned to generate electricity, replace them with nuclear fuel and coal, and use electricity itself to replace more oil and gas as a fuel, we have a means of saving substantial amounts of the fossil fuels we now import and pay for dearly. The scope of possible savings is evident when we note that we now spend about 9 percent of our oil consumption and about 16 percent of our gas consumption to produce one-third of our electricity.

Nuclear fuel can play an extremely important part in realizing this potential. It already has proved itself in more than 20 years of commercial use. In 1982, nuclear-powered generating plants produced more than 273 billion kilowatt hours of electricity. This amounted to almost 12 percent of total electricity production. Not only is nuclear energy far and away the least expensive, its increased use in recent years has freed considerable amounts of fossil fuels for other uses.

An adequate supply of electricity will need to be available to support an expanding economy and to provide employment for our expanding work force. If nuclear power is to play a part in providing that electricity, it will be necessary to remove the obstacles to its further use, which have been created by the Nuclear Regulatory Commission licensing process. In NUREG-0839, the Nuclear Regulatory Commission itself recognized that the cumulative impact of its regulations could result in a negative safety impact. Congress must act promptly to reform this process in order to assure the continued safe operation of existing plants and to facilitate the operation of plants under construction, as well as those which I expect to be or to be ordered in the future.

Both the NRC and the Department of Energy have submitted proposed licensing reform legislation to the Congress. I am not an expert on the licensing process, nor am I in a position to address the specific details of the legislation which is before you. My impression is that both bills address the key features of the process which need to be improved, particularly with respect to the public hearings. I believe that the changes proposed in this regard will enhance the opportunity for public participation by providing earlier and more comprehensive opportunities for members of the public to present their views. The provisions for standardized design review and approval should increase safety by providing for more thorough review by the NRC staff, while at the same time expediting construction time. There is one omission in the Nuclear Regulatory Commission bill, however, which I find very disturbing; that is its workers required to design and build nuclear powerplants take enormous pride in their work. However, because of the constantly changing NRC requirements these workers are often required to go back and do the same job several times. This creates morale problems and lower productivity. Also, I am sorry to say, there is a natural tendency not to put one's best effort forward under these circumstances. It is for these reasons that I believe it is essential that backfitting be dealt with as proposed by the Department of Energy's bill.

The reason I am appearing here today is not so much to advise you as to how you resolve all these matters, rather to urge you to expedite your consideration of them and get on with enacting a law. I know the chairman and this subcommittee have worked hard to accomplish this and I assure you that you have our continued support and encouragement in this endeavor.

I want to thank you for this opportunity to state the views of the building and construction trades department on the need to reform the nuclear licensing process. I would be pleased to answer any questions that might come within my level of expertise.

Senator SIMPSON. Thank you very much, Mr. Mundy. You are a very effective pinch-hitter, and I thank you.

I was just interested, Jim Curtiss shared with me a statistic from the June 14 hearing when we talked about the importance of this type of construction to the labor sector of our economy. A single nuclear powerplant represents approximately 15,000 man-years of direct employment plus another 15,000 man-years of indirect employment, spread over 6 or 7 years of the design construction period; over the lifetime, 30,000 man-years of additional employment. Interesting only in relation to your testimony because again what we are doing here is not a jobs bill either, but it is important that we blend in all aspects of this thing as we pursue it. And that was a statement from a Westinghouse person, I think it was, in June.

Anyway, I do have some questions, but I will submit those in writing to you and you can respond because you certainly haven't had full time to prepare for that. I will submit those.

Mr. MUNDY. Thank you.

Senator MITCHELL. I will do the same. Thank you, Mr. Mundy, for your statement.

Mr. MUNDY. Thank you.

Senator SIMPSON. The final witness of the day, Mr. Robert Erb, Jr., staff engineer of the Virginia Electric & Power Co. of Louisa, Va.

STATEMENT OF ROBERT E. ERB, JR., STAFF ENGINEER, VIRGINIA ELECTRIC & POWER CO.

Mr. ERB. I would like to use these charts to get my point across since pictures say a lot more than words.

Mr. Chairman, I am Robert Erb, speaking as an electric consumer and a previously unemployed technician who worked in many nuclear power generating facilities.

Senator MITCHELL [presiding]. Mr. Erb, before you begin, let me say I have your statement and have reviewed it.

Mr. ERB. This is just a summary.

Senator MITCHELL. I was just going to say could you summarize in 5 or 10 minutes. The entire statement will go in the record. And actually I have read a good deal and found it to be interesting.

Mr. ERB. I intended to summarize tremendously.

As I was saying, I welcome the opportunity to appear before you today and I commend you and this subcommittee taking up this important issue at this time.

I wish to make it clear I am here as an individual and the views I am presentinq are my own and not necessarily those of the Virginia Electric & Power Co. I am not representing VEPCO.

My interest in this matter stems from my experiences working at many other nuclear power facilities and other industries over the past 19 years. I have felt the growth trends within the nuclear power industry over the past 11 years and I have seen myself and many of my colleagues in the unemployment lines in the 1980's due to reductions of the growth in the nuclear power industry.

In addition, as an electric consumer, I have seen my electric bills increase in some months to more than my rent payment. This has been attributed mainly to the cost of fossil fuel and partially due to the high capital cost for construction of nuclear powerplants. The capital costs include the high interest cost, sometimes more than 30 percent of the cost of the plant, mainly due to the extended duration of getting construction permits and operating licenses.

I will concentrate my testimony in responding to the questions you are considering today as identified in my invitation.

I view the existing process for the licensing and regulation of commercial nuclear powerplants has proven to be an inefficient and ineffective means of regulation of this industry. This process has resulted in the following:

The facts have shown that licensing is not predictable, nor are the regulations stable. Chart No. 1 shows the decline in the number of nuclear power reactors operating, under construction, or planned from 1975 to present. I compare it with all the reactors throughout the world, which the trend is going upward; ours in the United States is going downward.

Senator MITCHELL. But does the existence of those two facts alone prove the assertion——

Mr. ERB. No; I am going to show some of facts based upon the information that I had available and I have tried to display.

Senator MITCHELL. Are these charts in your statement?

Mr. ERB. Yes, they are.

The opportunity for public participation is so great in the existing licensing process that it now takes 12 to 16 years to operate a nuclear powerplant, compared to a fossil powerplant that only takes about 4 years, as shown by this chart. Here you see nuclear power units in 1974 and it has increased in 1982 tremendously.

Senator MITCHELL. In your mind that is attributable solely to the fact there is public participation?

Mr. ERB. Not solely to that, but that is a factor, I believe.

The increase, over time, in the quality of decisions rendered by the NRC has made the NRC an engineering company whose objective has been to increase the cost of nuclear powerplants to the point that they are so uneconomically feasible that the NRC will no longer be needed, as shown in chart No. 3 here. I show the trends in the cost based upon what has actually occurred and what has been projected within the future and I compare with the Project Independence report that had estimated the cost at $478 per kilowatt of electricity and projected it would decrease to $438 per kilowatt by 1990. The latest I have seen for the North Anna Plant Unit 3 was $5,600 per kilowatt hour of electricity if completed in 1991.

The existing framework for efficient resolution of health, safety, and environmental issues is not efficient. All of the national, State, and local agencies involved in the decisionmaking, as shown in chart No. 4, insures that resolution of safety, health, and environment will never be efficient in terms of cost and use of manpower.

I believe that any change will result in improvements if its goal is to keep the nuclear powerplant a feasible alternative to satisfy

America's energy needs. As early as 1974, the Atomic Energy Commission addressed the actions required, which are still needed today. "In order for nuclear power growth to be achieved, it is important to reduce the time required to bring a nuclear powerplant on line." Those actions are noted in chart No. 5. Either one of those bills could lead to appropriate action as identified 9 years ago. Those bills basically try to solve some of these problems.

I believe that the recommendations that have been proposed must be accomplished through legislative action before administrative actions by NRC or other organizations could be effective.

I support both of the bills and any others that might speed the licensing process. In addition, I support any future legislation that would reform and restructure the electric power industry that will put the power generation facilities in the free enterprise system, and separate the transmission and distribution of electricity. I know the competitive advantages of the cost of nuclear fuel could stimulate the growth of nuclear powerplants, stimulate employment, and reduce the percentage of my income that I pay for using electricity.

I also support any legislative changes that will improve the image of nuclear power generating facilities. I support administrative changes that will reduce the bureaucracy of Government and the regulations that are imposed on individual actions. I also support administrative changes that will improve the imaqe of nuclear power generating facilities and and that will show that the President and America's executive branch support the growth of nuclear power generating facilities in the United States, as the French administration is doing in its country, as shown in chart No. 6. France is producing twice the percentage of nuclear power as the United States. Finally, as stated earlier, I do support changing the current licensing process. A need for change exists today, more so than in 1974.

Finally, I believe with the support of Congress, the administration could stimulate nuclear powerplant growth, stimulate employment, opportunities and help reduce the percentage of income all Americans pay for electricity and the goods that use electricity.

In conclusion, as a previously unemployed technician in the nuclear power industry and an electric consumer, I believe that passage of any legislation that will speed the licensing process would benefit people like myself.

Thank you for giving me the opportunity to speak with you. If you have any questions, feel free to ask.

Senator SIMPSON. Thank you, Mr. Erb. Certainly, as a staff engineer closely involved in the day-to-day operations of the nuclear powerplant we are interested in your perspective. I am interested in your thought on the backfitting issue. How pervasive is the backfitting problem and what do you think of the recommendation of the DOE and NRC with regard to that issue?

Mr. ERB. Well, I seem to lean a little bit more to the Department of Energy's proposal because—well, I think there is definitely too much backfitting going on and the cost of that backfitting requirement is adding to the cost of the electric consumers. As it is occurring, a large percentage of money is being spent on all operating facilities to satisfy those backfitting requirements.

Senator SIMPSON. Aside from equipment backfits, many of the industry expressed concern about the extensive and sometime erratic requirements proposed by the Commission on the utility to perform analysis and testing requirements. From your perspective, is that a significant problem, and do the Commission's requirements in that area suffer from the same lack of discipline and result in similar expenses for licensees as we have seen for these equipment backfits?

Mr. ERB. Well, from the experiences I have been involved with the NRC and trying to satisfy some of the requirements, I have seen a tremendous amount of time and energy spent on doing things that, from my perspective, seem hypothetically improbable. It seemed I was wasting my energies. I would like to see my energy being used for doing something constructive, doing something that will really benefit mankind.

Senator SIMPSON. I might ask a final question. As I view the recommendations of the NRC and DOE on the issue of standardized designs, they are based on a view that nuclear powerplant design has reached a significant stage of maturity, would be a phrase, that it is now time to consider this standardization of design. What interest is there in the nuclear power industry in pursuing the standardized design approach, and why is it the current authority which is presently available to the NRC is unused and apparently insufficient to foster this greater design standardization? I might be interested in your comment.

Mr. ERB. Well, from what I have experienced, I do know there are many engineering companies that have been attempting to develop standard designs. There are many different types of designs. The NRC backfitting requirements that have been required for light-water reactors, PWR's and BWR's, have required Bechtel and other companies to continually upgrade their standard design proposal. So, they have never been really able to use them from the last information I have heard. Now, I have talked to many engineers and operators and they tend to lean toward the new type of reactor that has less radioactive problems, less potential for safety and health problems, which is——

Senator SIMPSON. Toss one out. We will take anything.

Mr. ERB. It is the high temperature gas-cooled reactor that uses helium.

Senator SIMPSON. Well, the people haven't taken too many of those.

Mr. ERB. There is only one in the United States and they are developing a little bit further in Germany and other countries. And I see if we must maintain the requirements that the NRC has established in light water reactors, that we I think need to start looking into that avenue in research and development of that type of a facility.

Senator SIMPSON. Well, I want to thank you for the material that you have produced for us, and those statements and charts as you have summarized them and reproduced them will be included as part of the record. Thank you very much for being here to testify.

That will effectively conclude the series of hearings on nuclear licensing and regulatory reform. I thank you very much.

Mr. ERB. Thank you for giving me the opportunity to speak.

Senator SIMPSON. I want to pay particular tribute to Jim Curtiss, my very capable chief counsel and staff director of the subcommittee, and to Anita here of the minority and Keith Glaser of the minority, and others, majority and minority, of this small but hardy group that persevere. Thank you.

[Whereupon, at 4:12 p.m., the subcommittee recessed, to reconvene subject to call of the Chair.]

[Statements submitted for the record follow:]

REPORT
# of the

AD HOC COMMITTEE
FOR
REVIEW OF NUCLEAR REACTOR LICENSING REFORM PROPOSALS
ON
THE PROPOSED NUCLEAR LICENSING REFORM ACT OF 1983

December 15, 1982

The Chairman of the Nuclear Regulatory Commission has requested the recommendations of the Ad Hoc Committee for Review of Nuclear Reactor Licensing Reform Proposals on the legislative proposals of the Regulatory Reform Task Force (RRTF) as set out in a proposed Nuclear Licensing Reform Act of 1983.

The Ad Hoc Committee considered the legislative proposals at a meeting on December 1, 1982, and by correspondence thereafter. The Committee had before it SECY-82-447, dated November 3, 1982, containing, as a Draft Report of the RRTF, the legislative proposals and administrative proposals for rule changes regarding backfitting, the hearing process, separation of functions and *ex parte* communications, and the role of the NRC staff in initial licensing proceedings. We subsequently received a corrected copy of the legislative proposals.

In deference to the Chairman's request for a report by December 15, 1982, on the legislative proposals, we have limited this report to our recommendations regarding the proposed Nuclear Licensing Reform Act of 1983 ("the proposed 1983 Act") as it appears in the corrected copy. We have preliminary reactions to the administrative package. These will be included in a separate report to the Commission early in 1983.

The Ad Hoc Committee has previously presented its general views on licensing reform to the Commission in its August 16, 1982, Report on the proposed Nuclear Standardization Act of 1982. In that Report we endorsed the need for change to provide for:

a) Early Site Reviews;

b) Standardized Plant Design Approvals;

c) One-Step Licensing -- issuance of a Combined Construction Permit/Operating License;

d) Stability of Licensing Decisions; and

e) Revised Hearing Procedures.

We also set out our reservations regarding: the scope of that proposed legislation; the need to allow decision-making flexibility such that meaningful decisions could be obtained with respect to discrete subsystems of plant design and discrete site characteristics; the need to allow deferral of certain CP/OL items; and the need to address the intended purpose and characteristics of the public hearing processes.

With the exception of item (d) above, the proposed 1983 Act addresses our previous recommendations to some extent. The proposed 1983 Act is cast in terms of modifications to the existing structure of the licensing provisions in the Atomic Energy Act of 1954, as amended. This results in a somewhat awkward presentation of the proposals. It requires separate sections, each addressing a different type of licensing action, for which common policies and procedures may be applicable.

See proposed Sections 185, 193, 194. In addition, although stability of decisions is a central goal of the licensing reform, there is no backfitting provision contained in the legislative package, and, as presently constructed, a backfitting provision would have to be added to each section separately. A restructuring of the Act could make the statutory reform measures simpler.

For example, the reform legislation might be clearer and more explicit if it were organized around generic concepts of completeness of applications, conditional and final decisions, backfitting, public hearing processes relevant to nuclear facilities, and public hearing processes relevant to other NRC licensing responsibilities. Such a structure, for example, could consist of the following:

1. A single section which provides that the NRC is authorized to act upon applications for site permits, construction permits, operating licenses, design approval, amendments, or any combination of such applications.
2. A single section which provides that the NRC is authorized to make a conditional decision or a final decision with respect to the items identified in the preceding section. Final decisions would apply to all of those applications or subparts of

applications which contain sufficient information for the NRC to reach a decision such that essentially the only review remaining, if any, would be to determine by inspection and test that the proposed action has been taken in accordance with the decision. Final decisions would be subject to reconsideration only in conformance with a backfit policy. All other decisions would be conditional decisions. The subject matter of those conditions could be considered when application is made to remove the conditions or to determine that they have been satisfied. The non-conditional portions of a conditional decision would be subject to change only in conformance with a backfit policy -- thus preserving the one-step concept.

3. A backfit provision which provides that licensing determinations may only be considered for modification when the proponent of the proposed modification satisfies a defined burden.
4. A section establishing the appropriate public hearing processes and procedures for facility licensing.

5. A section establishing the appropriate public hearing processes and procedures for all other Commission actions, e.g., materials licensing, rulemaking, export licensing, etc.

Such a structural reformation would allow for fundamental licensing reform and, perhaps, increased clarity. On the other hand, modifications to the present structure of the Act, as set forth in the proposed 1983 Act, focuses Congressional and public attention on the changes in the present Act which are considered desirable. To accommodate the Commission's schedule, we set out below our recommendations with respect to each of the significant proposals in the proposed 1983 Act.

If enacted, the proposed 1983 Act would:

A. Delete that portion of Section 185 of the present Act which provides for establishing in the construction permit the earliest and latest dates for completion of construction and for termination of the construction permit if the construction is not completed by the latest completion date.

The Ad Hoc Committee concurs in this proposal.

Extension of the completion dates of construction permits has not provided meaningful reviews, in the past, of construction practices or design adequacy. Other and better opportunitites for such reviews have been utilized by the NRC and interested members of the public. The establishment of the earliest and latest completion dates has no real relationship to safety of nuclear plants. This deletion would allow a construction permit to issue for an indefinite period, subject, of course, to modification in conformance with any backfitting statute or regulation. For consistency purposes, the Commission might wish to provide, as it proposes for site permits and design approvals, that each permit be valid and conclusive so long as construction is initiated within a period of ten years, subject to renewal, as proposed in Sections 193e. and 194e. One member was of the view that the period should be three years, or that there should be no limit, provided that each permit should be subject to reconsideration in conformance with a Commission backfit policy.

B. Authorize the Commission to rely upon certifications of need for power made by any Federal, regional or State governmental organization.

The Ad Hoc Committee concurs with the purpose of this proposal.

The proposal would allow the Commission to defer to need for power determinations made by state, regional or other Federal agencies authorized by law to make such determinations. This proposal would not amend NEPA *per se*; it would allow the NRC, however, to recognize, as conclusive, the cognizant agency's determination with regard to the projected need for additional generating capacity as a factor in the NEPA cost-benefit calculus.

The "need" issue encompasses a spectrum of factors, including the means of influencing projected increases in demand. Certain of these means fall under the rubric of "conservation." The Commission should not impose any particular load projection procedure upon other agencies; it should, however, establish by rule those load influencing factors it expects the other agencies to consider, in any manner they please, if the NRC is to be expected to defer to their certification of need. While there is some disagreement within the Ad Hoc Committee, the majority view is that the deferral should be conclusive if the agency certifies it considered NRC's entire list of load influencing factors.

Most members of the Ad Hoc Committee urge the Commission to consider enlarging the scope of proposed Section 185b. to also include deferral to certifications of preferred types of generating capacity (e.g., coal, nuclear, hydro, solar, etc.) where they are made by cognizant agencies authorized by law to make such choices and where such agencies certify that they have considered alternative energy sources.

While the Commission should not allot to itself the responsibility to judge the fairness of procedures utilized by state and other agencies, it should only respect the certifications of those agencies whose procedures are substantially equivalent to NRC procedures. The determination of such substantial equivalency, however, should be made outside the docket of any specific license application and should not be judicially reviewable.

C. Authorize the Commission to establish procedures for one-step licensing, i.e.,isssuance of combined construction permits and operating licenses.

The Ad Hoc Committee concurs with the purpose of this proposal.

This proposal will require administrative implementation defining the quantum of required information to support issuance of a combined construction permit and an operating license. It will be necessary to define the detailed design criteria which will have to be supplied, if detailed final designs are not required. One parameter that may be considered is that the criteria should be sufficiently detailed to permit the Commission, through inspections and tests, to determine that construction has been completed in conformity with the CP/OL. Incidentally, the second sentence of proposed subparagraph 185c should be deleted. It would statutorily limit the Commission's means of determining completion of construction and it, inadvertently, would require a finding of completion of operation. The "inspection and test" formulation may be useful to describe the quantum of information to be supplied; it should not be the "sole" means available to the Commission to determine the conformance of construction to established criteria or designs.

The proposal would be more complete if it explicitly addressed how the Commission will address those matters which are not part of the plant design and which, as a practical matter, may not lend themselves to ultimate determination at the time of issuance of a combined CP/OL, e.g., emergency planning, operational quality assurance, operating procedures, etc. Thus, the legislative proposal would be enhanced if it expressly authorized the issuance of a combined CP/OL, subject to conditions which would allow one-step determinations of such issues during the course of construction, in accordance with scheduling guidance provided by the Commission.

While, as noted, the Ad Hoc Committee has not considered the proposed administrative reform package in detail, we note that it contains a backfitting proposal. The legislative proposal does not. One of the stated purposes of the proposed 1983 Act is "to improve the stability of licensing... of prior Commission licensing approvals." We doubt that this purpose is properly addressed in the statute in the absence of at least a reference to backfit regulations issued by the Commission. A combined CP/OL would be meaningful only if it is accompanied by genuine assurances of design stability. The Committee agreed that the legislation should explicitly provide that all issues once resolved should remain determined in the absence of a showing which meets the requirements of a reasonable backfit provision.

In this connection, it is not clear that sufficient consideration has been given to the impact on issued CP/OL, which may incorporate final design approvals under Section 194, of subsequent amendment or renewal proceedings applicable to such Section 194 approvals. We presume that the results of such amendment or renewal proceedings would not impact on previously issued CP/OL except pursuant to implementation of a backfit procedure. The legislative history should make this explicit.

D. Delete the requirement in Section 189 of the Act for mandatory construction permit hearings.

The Ad Hoc Committee concurs with this proposal.

E. Include as proceedings for which the Commission shall grant a hearing upon request of any interested individual the consideration of site permits, facility design approvals, and combined CP/OLs.

The Ad Hoc Committee concurs with the purpose of this proposal.

We understand that the proposal does not contemplate inclusion here of the "finding" that would be required, by proposed Section 185c, to be made by the Commission, that the facility subject to a combined CP/OL has been constructed and will operate in conformity with the combined CP/OL, etc. We do not disagree with this intention, but we urge that it be expressed explicitly in the legislative history to avoid uncertainty. The section-by-section analysis states, "The term 'find' as used here should not be construed to require a hearing as a condition precedent to full power ascension." This sentence, we believe, is intended to accomplish this purpose, i.e., to assure that the "finding" does not trigger an opportunity for a public hearing request which would be granted under Section 189 a.(1). The sentence should be redrafted to express this purpose more clearly and to be sure it does not inadvertently preclude requests -- related to the subject matter of such findings -- under Section 2.206 of the Commission's rules.

When the staff conducts its design verifications, construction inspections and testing, the details of those reviews and findings should be made publicly available. The Committee believes that any person should be able to obtain a hearing on the issue of whether the plant, as built, complies with the combined CP/OL conditions, but only if the person establishes by a prima facie showing that a significant safety or environmental issue was involved and that the plant did not meet the CP/OL requirements. However, the majority of the Committee believes that, in such circumstances, the proper procedure to follow is that established in Section 2.206 of the Commission's regulations, under which the initial determination to convene a proceeding is made by the Director of Regulation. One member believes that the initial determination should be made by an independent decision-maker, such as an ASLB or ASLAB member.

If it is the Commission's intention to include the "renewal" of a Section 193 site permit or a Section 194 final design approval within Section 189a(1), the term "renewal" should be expressly included in the first sentence of Section 189a(1). If the Commission's intention is otherwise, the legislative history should make this clear.

We note, in passing, a seeming inconsistency in subsections 189a.(1)(A) and (B). The first requires thirty days notice in the Federal Register prior to the grant of certain licensing requests. The second, which relates to design approvals, would require public notice within thirty days after filing of such an application. The Commission may wish to provide public notice in both cases within a short time after filing of the applications and have that notice trigger requests for hearings, if any, subject to the provisions of subsection 189a(2).

In the main, Section 189, as proposed, appears to be intended to apply to facility permits and licenses. The Commission may wish to consider whether it would be appropriate to propose a separate section to establish procedures appropriate to other Commission regulatory actions, e.g., materials licensing, rulemaking, export licensing, etc.

F. Include the so-called "Sholly Amendment" currently under consideration by the Congress.

Because this matter is already the subject of a Congressional Conference Committee Report, it has not been considered by the Ad Hoc Committee.

G. Prescribe the utilization of a hybrid hearing process in facility licensing proceedings.

The Ad Hoc Committee has significant reservations with regard to this proposal.

As we understand this proposal, and some elements of the administrative reform package, the following process would apply in all hearings on licensing actions related to facility licensing, site permits, design approvals, and CP/OLs:

1) After public notice and receipt of contentions from a petitioner, there would be a review by a screening ASLB which would specify the parties to the hearing and the issues in controversy;
2) Discovery would take place;
3) Parties would file written direct and rebuttal testimony;
4) Parties could request cross-examination as to issues of material fact; as to all other issues, a decision on the merits may be entered;

5) Oral argument may be scheduled;
6) Designation of questions of fact which may be resolved in an adjudicatory hearing;
7) Conduct of adjudicatory hearing;
8) Decision.

While there may be some utility in resolving some issues in controversy without the trappings of an adjudicatory hearing, some members of the Ad Hoc Committee are concerned that the prescribed procedures may extend the hearing process and decision schedule in time, unless steps 3 through 7 can take place while the Regulatory Staff's Safety Evaluation Reports and Final Environmental Statements are being prepared. They believe that, in general, the major delays associated with public hearings are attributable to the time devoted to getting to the public hearing and to the time required to obtain decisions following the public hearing. With rare exceptions, the public hearings themselves -- even with protracted cross examination -- have not been a material schedule factor in the overall public hearing process.

In addition, some members are concerned that the determinations regarding the grant or denial of cross-examination could raise additional questions for review within the NRC and by the courts.

We recommend that the hybrid process be authorized, but not mandated for use in all proceedings. It may well be that, on the merits, the submittals contemplated by the hybrid process, in the form of written submissions alone, will be perfectly adequate for reasoned decision-making. The Commission, therefore, in its discretion, should have the option to experiment with this process for decision making. One member of the Ad Hoc Committee believes that the Commission's discretion in this regard should be exercised only with the consent of all parties to any particular proceeding.1/ In any event, the exercise of this discretion should not be reviewable.

In its considerations, the Ad Hoc Committee also concluded that there were a number of substantive problems presented by the current draft of Section 189b. For example, the final sentence, which requires the submittal in writing of "all the facts and arguments" "at the time the proceeding is initiated" is puzzling. When is the proceeding initiated -- before or after contentions are admitted -- before or after discovery is concluded? Is the submittal different from the "written data, views, or arguments" called for by the first sentence? Must the latter be of evidentiary worth upon which decisions may rely? Is Section C(1)(B) the equivalent of a determination that resolution of the dispute would be material? The statute need not have the level of detail set out in

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1/ This member also contends that experimentation with regard to hearing processes be coupled with experimentation with regard to funding of intervenors.

Section 189b. It would suffice to authorize the Commission, in its discretion, to utilize and adopt appropriate hybrid procedures.

While we have not reviewed them in any detail, we recognize that the administrative reform proposals attempt to address such fundamental questions as:

(a) the appropriate parties to hearings;

(b) the role of the NRC staff in hearings;

(c) The proper standard for sua sponte reviews by licensing boards; and

(d) the appropriate threshold level for purposes of admitting contentions.

It would be well, however, to include in the legislative package a declaration of the purpose of the public hearings, e.g., the resolution of disputes between proponents and opponents of proposed licensing actions, and a declaration relating to the desirability, if any, of intervenor funding. (Please see separate statements on this matter attached to our August 16, 1982, Report.)

This declaration of purpose is important. It would assist in resolving issues that recur in adjudicatory hearings from uncertainty regarding the role of the intervenor. Is it, for example, to bring information to the decision-makers? Is it to review the adequacy of the staff review?

One matter that concerned the Ad Hoc Committee is whether it is appropriate or necessary to await the issuance of staff SER and EIS documents to define the matters in controversy, or whether the matters to be heard should be limited to those in dispute between applicants and third parties. On the one hand, it is contended that the staff review and its publications can be used to resolve and narrow differences, thus possibly reducing contentiousness and matters in controversy. On the other hand, if the purpose of the hearing is to resolve differences between the private parties, not to review the quality of the staff review, but to provide input to the staff analyses, then the substantive controversies should be litigated without waiting for the issuance of the staff documents. The staff, of course, could participate in connection with the resolution of any issue it deems important. A related question, which we did not resolve, is the extent to which members of the staff should be available as witnesses for any party if the process is not to await the staff documents. If the purpose of the hearing is to allow private parties to participate in reviewing the quality and validity of the staff review, apart from resolution of their specific contentions, then, of course, the staff documents would have to be entered in the record and considered. A suggestion for considering this matter, apart from the hearings to resolve disputes between the parties, would be for the Commission to entertain a Section 2.206 type of petition which may take exception to a staff document.

H. Authorize Early Site Reviews and Approvals.

The Ad Hoc Committee concurs with the purpose of this proposal.

The proposed Section 193 is not drafted so as to determine site suitability solely for purposes of accommodating approved standardized plant designs. This is appropriate. The section-by-section analysis of subsection 193c, however, hints at such a limitation. That suggested limitation is unnecessary and should be deleted.

Proposed subsection 193g would preserve the availability of current Commission rules concerning the review of limited site suitability issues. This authorization should be stated affirmatively to allow determinations of specific site-related characteristics that could affect the design and/or installation of a nuclear power plant at the site. These determinations should be granted the same conclusivity and stability assurances given to the site permits.

The proposal is deficient in its failure to authorize the determination of environmental issues, including consideration of alternative sites and their rankings. Relatedly, the proposal should explicitly consider and determine when and how NEPA and environmental matters will be taken into account in the several site suitability determinations. Among the difficult issues to be addressed and resolved are:

(a) whether and which environmental determinations would necessarily require assessments of the cost of, and the need for power from, facilities which only later may be proposed for installation at the site;

(b) at what point in a site suitability determination would an environmental impact statement be required; and

(c) the stability of environmental determinations made prior to the preparation of an environmental impact statement.

Section 193c.(2) purports to deal with one narrow aspect of environmental reviews as they may involve consideration of need for power. It does not appear to be necessary for any site permit or site suitability determination standing by itself. The pertinence of a need for power determination in this setting, however, should be considered in connection with resolving questions (a), (b), and (c) above. The resolution of the matter should be consistent with the discussion in Item B above.

The proposal should permit applications for site permits by any "person." It should not be limited to defined types of applicants.

The proposed Act is not sufficiently explicit with respect to the binding nature of such site suitability determinations. It addresses the matter only in terms of "conclusivity" of the site permit for a term of years. The determinations and approvals made in the early site review process are essential premises for planners. The statute should clarify the extent to which such determinations and approvals can be reopened prior to or at any subsequent licensing stage, at the initiation of the staff or any party. The present draft is silent on these matters, although it would allow review -- presumably at least by the staff -- of "significant new information" at a renewal of a site permit. At a minimum, there should be an explicit statement in the legislation that the validity of a site permit could be challenged only in conformance with the Commission's backfit procedure. In this connection, Section 193e.(2)(B) should be revised to allow renewal in conformance with the Commission's backfit procedure.

I. Authorize approvals of nuclear power plant designs.

The Ad Hoc Committee concurs with the purpose of this proposal. As in our comments above on early site approvals, we suggest an explicit statement in the legislation to the effect that the conclusivity of a design approval may be challenged only in conformance with the Commission's backfit procedures.

Some members of the Committee were concerned with the section-by-section analysis discussion of the circumstances when there may be a hearing in connection with proposals to combine pre-approved sites with pre-approved designs. In particular, they recommend deletion of the burden on a proponent to show that through the exercise of diligence the proposed issue could not have been presented at an earlier proceeding. It is not clear whether the corrected text would also require the proponent to show why, under Section 2.206, the issue had not been raised earlier.

No rationale is presented in the section-by-section analysis for proposing Section 194f.(2) which would appear to restate existing law, at least as to the Commission's authority to approve or issue standards and criteria by rule. The purpose of this provision should be clarified.

Separate Views
of
Stephen Long

JAMES B. COULTER
SECRETARY

LOUIS N. PHIPPS, JR.
DEPUTY SECRETARY

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MEMORANDUM

December 6, 1982

TO: Members of the NRC Ad Hoc Committee

FROM: Steve Long

SUBJ: Reform of the Hearing Process

After reviewing the proposed legislative and administrative reform packages, and in light of our discussions during the December Ad Hoc Committee meeting, I believe it is important to more explicitly delineate my views on the purpose of the hearing process, its proper conduct, and my concerns over the trend of the proposed revisions.

It is a function of the NRC to review the environmental impacts and public health and safety implications of each proposed nuclear power plant. The NRC staff provides detailed technical review and recommendations, the public is invited to comment and/or intervene, and the ASLB's serve primarily to resolve disputes. (On this last point, I agree with the Committee majority except that I do not favor prohibiting sua sponte review by the ASLB's.) I definitely disagree with the implication, in our last Committee meeting, that the public should not be able to dispute the findings of the NRC staff. I also strongly disagree with the implication that a member of the public must develop his contentions and supporting data independently of and prior to the completion of the NRC staff's review. The whole thrust of those proposals moves towards suppression of intervention, rather than resolution of issues.

I advocate a revision of the hearing process which reflects two realities missed by today's system and the revisions already proposed. First, it is important to recognize that, when an application is first submitted, there will be many people who have an interest in seeing that the review is done correctly and that the policy decisions recognize their concerns. However, at that early moment, these people should not yet have contentions. They need time to evaluate the proposals and, if necessary, negotiate for settlement of issues discovered. Forcing them to state contentions too early forces combative positions at a time when cooperation and coordination should be fostered. It is recognized that the NRC staff needs time for review, so why should the "intervenors" be expected to react any more quickly?

The second reality is that the public must rely primarily on the NRC staff to conduct the reviews. It is also true that the NRC staff must rely upon the public and local government to identify site specific issues that are not already accommodated by the application. They should be encouraged to work together at this stage. Certainly, the public should not be expected to complete its analysis before the NRC staff can complete its own.

The procedure I advocate for this process is but a slight revision of the present practice. It is designed to enhance conflict resolution and provide a sound basis for raising the threshold for admission of contentions. It is laid out below in sequence:

I. Initial Notification Stage

  A. Application Received by NRC

  B. NRC publishes announcement that contains

    1. Application specifics (location, plant type, etc.)

    2. Date and location of a pre-review conference to identify parties of interest

  C. NRC appoints ASLB

  D. ASLB conducts the pre-review conference

    1. Parties register their identities and their areas of interest.

    2. Discovery privileges are not immediately available at this stage, but informal interchanges are encouraged.

II. Review Stage

  A. NRC staff conducts application review, meeting with interested parties as appropriate on specific issues.

  B. Any party may request that discovery privileges be granted by the ASLB on specific issues, and the ASLB may, at its discretion, conduct legislative type hearings to determine whether an issue has been defined adequately to justify the use of discovery.

  C. NRC staff publishes draft SER and EIS for comments.

  D. Interested parties are required to make written response to the draft documents in areas of their interest.

  E. Parties file a list of unresolved issues with ASLB.

  F. The ASLB convenes a legislative type hearing to determine which of the listed issues will be granted discovery privileges.

G. Review is completed by NRC staff and final EIS and SER are issued.

III. Hearing Stage

A. "Interested parties" which wish to intervene file motions, stating contentions, supported by data.

B. ASLB holds legislative type hearing for arguments on admissibility of contentions; admits those it deems appropriate.

C. Parties take depositions and file written testimony.

D. After reviewing other parties' testimony, ASLB convenes adjudicatory type hearing to allow for cross examination.

E. Process proceeds as under present system.

Although this is a lot to write, it should not increase the duration of the licensing process, because the added steps are concurrent with the staff review. By limiting the availability of discovery in the early stages, direct interaction is encouraged and harrassment by burdensome interrogatories is minimized. Avoidance of contentious statements and increased direct contact should promote conflict resolution. Because contentions are not filed until all pertinent data should be available, and ample opportunity for resolution has been provided, the elevated threshold for acceptable contentions is justified.

It would not be necessary for the NRC staff to participate in the hearing except on contested issues. However, it should be possible for an intervenor to specifically dispute the NRC staff's findings. This has long been a practice in federal licensing proceedings, where the regulatory agency generally publishes a draft permit, initial decision, or some other statement of position prior to the opportunity for public hearing. This is only fair to the interested citizen, who has a right to expect the regulatory agency to protect him and reason to wait until it doesn't before investing his time and funds in an effort redundant to the agency's. The potential for appearing in a public hearing is also a very valuable incentive for the staff to produce quality reviews and reports. For these reasons, I strongly object to the proposal to allow the hearings to proceed and even complete, without the SER and EIS issuing.

It is also important to note that the conceptual procedure described here is essentially that followed by Maryland during its participation in NRC licensing processes. It also reflects the type of interactions encouraged by Maryland for its intrastate proceedings before its PSC. Having experienced this sort of interaction from both the positions of an intervenor and the review staff, I can recommend it for its fairness and the productivity produced by its good-faith format.

SML:ph

Separate Views
of
Anthony Z. Roisman

In our first report and again in the present report the Ad Hoc Committee gently observes that the approach being taken to licensing reform by the Regulatory Reform Task Force (RRTF) is fine in its purpose but inadequate in its execution. One purpose of these separate views is to state more strongly that the legislative reform package is seriously flawed and if passed as now proposed (even allowing for "cleaning-up" the obvious mistakes) it will create a licensing process which will be far more confused and inefficient than the one it now replaces.

First, the present RRTF proposals attempt to backfit the reforms on a statute whose structure is unsuited for it. A rewrite of the statute which preserves all the present concepts except those specifically intended to be modified is needed. Such a package would be no more or less controversial than the RRTF proposal if done carefully and clearly.

Second, the RRTF proposal continues to suffer from at best unnecessary subtlety and at worst severe ambiguity. For instance, it is still not clear how and where NEPA applies; it is still not clear what the practical affect of a CP/OL decision is for purposes of stability of design; and it is still not clear what or how the statute affects backfitting concepts. Nothing is gained by glossing over these admittedly controversial concepts.

Third, the need for power determination is too significant to basic energy decisions involved in nuclear plant licensing to be dealt with in as casual a manner as is now proposed. The statute should clearly specify the procedural requirements which should be followed to allow the NRC to defer to another governmental entity and should specify the scope of the issues to which the deferral applies.

Fourth, in general I believe it was the intent of our Committee to say in its second report that we meant what we said in the first report and that to the extent the RRTF proposal does not follow those recommendations it is unacceptable. We have not been convinced to change our views on any of our original major points. This includes specific statements regarding the drafting as well as the concepts embodied in the RRTF proposal. Where we say "believes," read "is convinced" and where we say "would be enhanced" read "should be done."

In addition to re-emphasizing our main points I also want to comment on the hearing procedures. The Committee has quickly analyzed the RRTF proposal and found it unacceptable. The flaws noted there are more than adequate to warrant rejection of that particular hybrid hearing format[1] but I want to discuss the hybrid hearing concept more generically.

First, the FY82 Annual Report of the Atomic Safety and Licensing Board Panel makes clear that a wholesale restructuring of the hearing process in the name of "efficiency" is unwarranted. The Report concludes that for FY82:

> The data bespeaks efficient hearing management and expeditious case completion.
>
> * * *
>
> . . . not a single operating license has been delayed by the hearing process.

Second, the hybrid hearing process as proposed has the practical effect of denying most members of the public any meaningful participation. It is a process that if fair for anyone is fair for the well-financed party. It is undeniable that virtually all public participants have only a tiny fraction of the financial resources available for hearings of the NRC staff or the applicant.

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[1] The RRTF reliance on Supreme Court decisions to require a factual presentation as a prerequisite to contention admission is misplaced. Those cases at most warrant a "factual analysis" --i.e. a description of the kind of facts to be presented -- and not facts themselves. In addition setting a threshhold burden to exercise a right of participation which parties as a class are financially unable to meet raises serious constitutional questions.

Third, there is nothing in the hybrid proposal which is designed to improve the quality of the hearing process. Yet it is the quality of hearings which still remains deficient, i.e., licensing boards make the finding that a particular plant is properly designed and constructed, which finding subsequent events (TMI, steam generator tube leaks, pressure vessel embrittlement caused by radiation etc.) prove to be in error. Those errors not only risk human life but cost money to rate payers, shareholders and utilities. The only sensible hearing procedure reform is one that begins with the premise that those problems in the quality of the hearing should be corrected. The RRTF hybrid hearings proposal which focuses on speeding up the licensing process is akin to focussing on the issue of avoiding a delay in arrival of the Titanic after it has hit the iceberg. There are other far more pressing problems.

Fourth, certainly no system of experimentation with altering the rights of parties to a hearing as the majority of the Ad Hoc Committee proposes should be allowed unless the parties consent to the experiment. In addition, if the theory is that new hearing procedures are required but no one is sure what they should be and experimentation is warranted then the experiment should include all reasonable options including hybrid hearings, more depositions and prehearing filings, financial resources for the presentation of all relevant points of view, single person hearing boards, etc.

Finally, the proposal to limit the role of the staff as a party to the proceeding offers many interesting possibilities. One of these is for the staff to be a hearing ombudsman whose principal responsibility is to assure than on crucial issues in dispute all relevant information is presented. The staff could provide an in-house witness or a consultant not to state a staff position but to complete the evidence on a legitimate issue in controversy. The Ad Hoc Committee will spend more time on the proposed alteration in the staff role at future meetings. Even now it is clear that there are many ramifications of this proposal which warrant careful study before a final decision is made. It may be that statutory change is required to significantly alter the staff role.

CONCLUSION

In many ways the RRTF and the Ad Hoc Committee appear to be ships passing in the night, each on its own voyage to a different destination. The Commission might find the process more useful were it to convene a meeting at which the Commissioners interrogated the Committee and the RRTF at the same time thus fleshing out the reasons for the different approaches recommended.

STATEMENT
OF THE COMMITTEE ON REGULATORY ASSESSMENT
OF
SCIENTISTS AND ENGINEERS FOR SECURE ENERGY, INC.

Mr. Chairman and Members of the Subcommittee:

The Committee on Regulatory Assessment (CRA) appreciates the opportunity to submit its views on nuclear licensing reform in connection with your Subcommittee's consideration of S.893, The Nuclear Power Plant Licensing Reform Act of 1983, and S. 894, The Nuclear Licensing and Regulatory Reform Act of 1983.

The CRA was formed in 1982 by Scientists and Engineers for Secure Energy, Inc. (SE_2), a nonprofit organization of scientists and engineers dedicated to facilitating communication between the professional scientific community and public policymakers on energy and natural resources issues. The members of the CRA are scientists and lawyers with public policy experience in nuclear energy matters gained through prior service as heads of the Atomic Energy Commission and the Nuclear Regulatory Commission and in private sector nuclear activities. The CRA's aim is to develop and communicate to the responsible public officials recommendations for improvements in the nuclear regulatory process which merit legislative or administrative reform action.

The CRA strongly supports meaningful reform of the current nuclear licensing and regulatory process. Our members are unanimous in their view that the present process has serious structural and operational deficiencies. These deficiencies impair the effective application of industry and regulatory technical resources, detract from the quality of regulatory decisions and provide a less than satisfactory regime for public participation in the licensing process.

The Problems

In their respective submissions to the Congress, NRC and DOE identify what are generally agreed to be the basic shortcomings of the present process:

- It is unstable in its requirements and unpredictable in its decisions;
- Currently mandated licensing procedures are a disincentive to industry and regulatory initiatives that would optimize use of safety resources; and
- The public's participation occurs far too late and in a format which is overly formal.

The bills proposed by the two agencies state common aims -- which we also share -- but depart somewhat in the recommendations for their realization. Our comments, which follow, address the matters which we believe paramount if worthwhile reform is to be achieved and relate them to the provisions of the bills before the Subcommittee.

Backfitting

There is virtual unanimity that a responsible backfitting regime is an essential element of any effective regulatory process. There is also wide agreement that discipline, coherence and consistency in approach are desirable for such a regime. Disagreement arises when one tackles the specific contents of that regime.

By any fair measure, the current backfitting process is unsatisfactory. Apart from the fact that the ostensible regulatory standard (10 CFR Part 50.109) has largely been disregarded in practice -- as the NRC itself acknowledges -- the standard has some serious shortcomings. There are multiple ways -- informal as well as formal -- in which backfit requirements can, as a practical matter, be imposed on licensees. Until recently, no systematic review was conducted within NRC as to the need for or implications of specific proposed backfits; and there was no requirement that the NRC staff consider the impact of a modification to one system on the performance of others or the safety of the plant as a whole.

The Commission is aware of the safety and other implications of the backfit problem and it is to be commended for the actions it has taken, and the further ones it is now considering, to address the problem. We especially commend the Commission for establishing the Committee to Review Generic Requirements (CRGR), and the CRGR for beginning to bring the problem of generic backfitting requirements under control. We note, however, that the CRGR has not addressed the myriad of facility-specific backfit requirements imposed on licensees and the Commission itself recognizes that further action is still required in this sphere.

Without discounting the worth of administrative reform, we think that the public policy issues involved and the need for long-term stability and certainty warrant the incorporation of the principal backfit criteria within a statutory framework. In this regard, we believe that the central elements of the backfitting provision of the DOE-proposed bill (S.894) deserve serious consideration by the Congress. In essence, that approach would call for establishment of a centralized review process for all backfit requirements; would define backfitting to encompass the entire spectrum of ways in which new requirements are imposed; and would preclude a backfit unless it will substantially improve overall plant safety or security protection during the remaining operating life of the facility.

Standardization

We strongly support the concept of design standardization -- a central element of the NRC-proposed bill -- and endorse the "finding" that appears in section 2(a)(5) of that bill (S.893):

> [T]here is a need to encourage the development and use of standardized nuclear powerplant designs because such designs can benefit public health and safety by concentrating the resources of designers, engineers, and vendors on

> particular approaches, by stimulating standardized programs of construction practice and quality assurance, by improving the training of personnel and by fostering more effective maintenance and improved operations, and because the use of such designs can permit a more effective and efficient licensing and inspection process.

We believe design standardization will result in four significant benefits:

(1) Standardization will enhance the safety of nuclear power plants for the reasons identified in the above-quoted NRC finding;

(2) Standardization will improve the quality of NRC licensing and regulatory actions by enabling the agency to focus its resources on fewer designs and in fewer review proceedings, thus allowing it to concentrate on the more important safety questions;

(3) Standardization will reduce the cost of building nuclear facilities since plant construction would begin and be completed on the basis of a design that had previously been approved by NRC and changes in which would be rigorously controlled. Similarly, standardization will contribute to the stability of licensing decisions by eliminating a major source of backfitting requirements -- the present practice of commencing construction prior to completion of the design and the resolution of design issues.

(4) Standardization will enhance public participation in the licensing process by affording persons whose interests are affected an opportunity to have their views considered earlier in the process, before any major commitment by the utility to a facility employing the design. In addition, public participation would be more meaningful than at the present construction permit stage because the hearing would be held with respect to an essentially complete and final design.

The concept of design standardization is not a new one. The Atomic Energy Commission first established a limited standardization program in 1973 and, in the ensuing decade, major reactor vendors and architect-engineers have developed their own standard nuclear designs for reactor and balance of plant systems. From a national policy standpoint, the Presidentially-appointed Kemeny Commission and the NRC-appointed Special Inquiry Group investigating the Three Mile Island accident both recommended that the NRC encourage standardization, the latter panel concluding that standardization would "substantially improve plant safety and reliability." And, a recent Office of Technology Assessment study, requested by the House Interior and Insular Affairs Committee and endorsed by the Senate Subcommittee on Nuclear Regulation, reaffirmed the need for standardization.

Notwithstanding these expressions of support and the progress on standardization under the current regulatory framework, we do not believe that standardization will become an industrial reality without a clear statutory basis and a matching licensing regime. That view, we note, is shared by Chairman Palladino, who testified that standardization "should have the stamp of approval by the Congress" if it is to be accompanied by "the stability that I believe that we need."

Further, we think legislation supporting design standardization is needed now. On this point, the previously cited Office of Technology Assessment report urged that:

> If standardization is to succeed at all, NRC must start planning for it now during this period of slack growth in nuclear power. They must develop plans for future standardization, including possible implementation of one-step licensing. In addition, the vendors should realize that domestic orders for nuclear steam supply systems (NSSS) may not occur over the next few years, and they should take this opportunity to review and improve their basic designs.

Specifically, we believe the Congress must take the following actions if standardization is to be a practical success and its benefits are to be realized:

(1) Congress should give legislative recognition to standardization as a major policy objective of our nuclear power program.

(2) Congress should authorize the NRC to grant approvals for final nuclear power plant designs, independent of individual license applications. By "final" designs we mean that the design approval application would contain sufficient information for the NRC

to determine whether the plant, if built in accordance with the application, can operate in accordance with the standards established by the Atomic Energy Act, i.e., without undue risk to the public health and safety and consistent with the common defense and security. Design approvals should be explicitly deemed conclusive as respects all design issues encompassed thereby in subsequent licensing proceedings for facilities employing that design.

(3) Congress should establish a secure legislative framework in which the full benefits of standardization can be realized. This necessarily requires several complementary reforms -- namely, single-stage licensing, early site approvals, stability of approvals granted, and improvements regarding the time and manner of public participation. These are discussed more fully below.

The major benefits derivable from design standardization should not and need not foreclose technological improvement. In this regard, we recommend that licensing reform legislation enacted by the Congress expressly allow holders of design approvals and licensees to incorporate improvements that result from technological advances. To that end, we endorse provisions in both bills distinguishing between applicant-initiated changes and NRC-imposed changes and the provisions in the DOE bill providing for deviations from licenses and design approvals. Such provisions should be supported, not as a convenience to licensees or holders of design approvals, but as serving the public interest by encouraging technological improvements. Further, we recommend the addition of provisions ensuring timely consideration of such initiatives.

Single-stage Licensing

We strongly endorse empowering the NRC to issue "single-stage" licenses authorizing both construction and operation of a facility where the license application contains sufficient information for the NRC to make all requisite public health and safety and common defense and security determinations. In this regard, we clearly prefer the "single-stage licensing" formulation of section 185(b) of S.894 (the bill proposed by DOE) over that in section 185(b) of S.893, the NRC proposal. The former provides for true single-stage licensing. The latter maintains a second review stage and licensing proceeding; indeed, the NRC bill analysis states that what would be involved at the preoperation stage is "the issuance of an operation authorization that would be considered a license...." We believe that a second licensing proceeding at the operating stage, even though all major licensing issues had been resolved before construction commenced, would not only be unnecessary but would stand as an obstacle to the success of standardization and the realization of its benefits.

The issue of whether a facility has been constructed in compliance with the single-stage license must of course be subject to continuing NRC inspection and verification throughout the construction process. In the event that a facility has not been constructed in compliance with its license, section 186 of the Atomic Energy Act currently authorizes the NRC to revoke such license, and section 2.206 of the Commission's regulations provides a means for persons who believe they have significant new safety information to request the NRC to institute a proceeding (with a hearing) to revoke or modify a license at any time.

The NRC, in short, will retain full regulatory authority throughout the construction and later operation of the facility. The public will have had multiple opportunities to participate before commitments are made by a utility to a specific design and site and will also have a means for bringing special issues to the attention of the NRC prior to facility operation. In view of these safeguards and of the further fact that standardization of final designs -- with its heavy front-end commitment of resources -- will not work without eliminating the uncertainties inherent in a second (pre-operational) licensing proceeding, we think the case for true single-stage licensing is amply supported.

Early Site Approvals

We endorse authorizing the NRC to approve sites as suitable for nuclear power plants within certain design parameters independent of individual license applications. We believe this proposal would enhance public participation by providing an opportunity for a hearing on the use of a site for a nuclear power plant prior to a utility applying for a license to construct a facility at the site or making a significant financial commitment to the use of the site. In addition, early site approvals would remove site reviews from the critical path of nuclear power plant licensing, thus reducing costly delays and adding greater certainty to the nuclear plant planning schedule.

Public Participation

We strongly support granting the NRC explicit authority to conduct "hybrid" hearings, i.e., to use informal hearing procedures for all issues other than those which truly warrant a trial-type format. There is legal support for the proposition that the NRC currently possesses latitude under the Atomic Energy Act for providing a more flexible hearing format. In light of the consistent past practice of the agency in using trial-type hearings, however, decisional certainty makes it sensible for the NRC to obtain express legislative authority before adopting a different format. As we understand the hybrid hearing proposals of both S.893 and S.894, the Commission or its hearing officer would determine which issues warrant adjudicatory procedures following initial consideration using informal (or "legislative-type") procedures.

We further support mandating the use of hybrid hearing procedures in all licensing proceedings, as contemplated by S.894, as opposed to making the use of hybrid hearing procedures discretionary, as proposed in S.893. We believe that the discretionary authority contemplated by S.893 would result in procedural uncertainty and also render use of hybrid procedures vulnerable to judicial reversal, thus discouraging the NRC and applicants from departing from full adjudicatory procedures.

We also endorse efforts to define the purpose of the hearing by legislation. Specifically, we urge the Congress to adopt the "finding" proposed by the NRC in section 2(a)(11) of S.893, namely:

> [T]he purpose of the hearings provided for in section 189 of the Atomic Energy Act of 1954 is to resolve issues of fact in dispute between the parties to the proceeding.

In our view, the proper -- and sole -- purpose of the hearing should be dispute resolution.

For like reasons, we endorse the proposed elimination of the mandatory hearing in uncontested construction permit proceedings. Where there is no dispute to resolve, there is no sound reason for a hearing.

Further, we disagree with those who believe that the proposals embodied in S.893 and S.894 would diminish public participation in the licensing process. To the contrary, the reforms proposed in S.893 and S.894 offer far more meaningful opportunities for public participation than at present. As our prior comments should make clear, the public would be provided with ample opportunities to participate early in the process -- when it counts -- before design and site decisions and the financial commitments based thereon have been made; and the information base for that public participation would be substantially greater than is now the case.

Conclusion

Finally, we wish to emphasize that while some of the problems of the present licensing and regulatory regime can be addressed administratively -- and the NRC has already taken a number of steps in this regard -- legislation is required to give the reforms discussed above the national policy support and regulatory certainty that are required for their effective implementation.

We appreciate the opportunity afforded to submit these views and hope they will make a constructive contribution to the Subcommittee's important task.

STATEMENT OF
J. HUGH DEVLIN

MANAGING DIRECTOR
MORGAN STANLEY & CO. INCORPORATED

My name is J. Hugh Devlin. I am a Managing Director of Morgan Stanley & Co. Incorporated and am involved with my firm's financing and advisory activities with the public utility industry. Morgan Stanley is a leading investment banking firm in the underwriting and placement of securities. We provide investment banking services to a broad group of electric utility clients, all of whom are involved in the nuclear power industry to one degree or another. In connection with our investment banking activities, detailed analyses, comparisons and studies are made of companies, industries and the capacities of financial markets. In addition, we are in continuous contact with major institutional debt and equity investors numbering over 1500 in this country and abroad.

The purpose of my comments is to support legislative reform of the NRC licensing process from the point of view of investors in the electric utility industry. In doing this, I will briefly discuss the financial condition of the electric utility industry, investors' attitudes toward nuclear utilities and finally investors' views toward the licensing process. Rather than discuss the details of specific pending nuclear licensing reform legislation, I will address the effects of uncertainty and unpredictability in nuclear licensing and regulation on the capital formation process for electric utilities.

1. Financial Condition of the Electric Utility Industry

My first observation is that nuclear licensing is an investor issue. Investors, primarily individuals and institutions representing individuals, have provided billions of dollars of capital to finance completed nuclear units and units currently under construction. They have very large amounts of funds committed to the debt and equity securities of the electric utility industry and have seen the quality of these investments decline over the last decade. In 1972, the average bond rating of this industry (probably the best measure of the industry's financial health) was double A; today it is triple B, the lowest category of "investment grade" security, coming just above a "speculative" investment. The industry has sold millions of shares of new common stock at less than book value, permanently diluting the value of the investments of all shareholders.

Although this financial decline has been the result of many factors, a principal cause has been the extended and unpredictable construction programs of the industry. The problems associated with nuclear licensing and regulation, because they increase costs and delay construction, have contributed to the weak financial condition of the electric utility industry prevailing today. This in turn has made it increasingly difficult for the industry to attract much needed capital.

Although there has been some improvement in past months in the price performance of utility securities, this has been mainly the result of declines in inflation and interest rates, and not an improvement in the basic financial condition of the industry. Importantly, this improvement has been concentrated in utilities which have completed their construction cycles. Those utility companies which have significant construction requirements -- primarily relating to nuclear units -- continue to be weak.

Our studies indicate that 31 of the 50 utilities with nuclear units under construction have ratings of less than single A and, for the first time, six of these are rated double B, making them speculative investments. As is well known to professional investors, a rating lower than single A eliminates important sectors of buyers of debt securities who cannot, by law, or will not, by policy, invest in such low-rated securities. This reduces the availability of capital to such companies and increases their financing costs, which ultimately results in higher rates to their customers. When a Company's debt declines to a double B rating, its ability to raise capital on reasonable terms is constrained and the availability of the capital market is seriously limited.

As a result of this low financial quality, we observe a reluctance by investors to supply the amounts of capital needed to complete nuclear units. An improvement in the nuclear licensing process should help to stabilize the estimated costs and schedules for nuclear units under construction. Although not the total answer to the electric industry's financial problem, we believe that nuclear licensing reform would be viewed by investors as a positive step toward a more stable environment and would indicate support of nuclear construction from the federal government.

2. Investors' Attitudes toward Nuclear Utilities

Operating Nuclear Units. We are frequently asked about investors' attitudes toward nuclear generation. For investors, the problem is not nuclear generation but rather nuclear construction. In the past, investors have viewed nuclear generation as a feasible fuel option which can produce low-cost and reliable energy. In general, we still believe that most investors are relatively indifferent to the type of fuel used in operating units as long as a utility has a reasonable diversity of fuels. This may be seen by the fact that companies with operating nuclear units (and no additional units under construction) are well-regarded investments (provided they have good operating experience).

We note, however, that this investor view toward nuclear generation may be changing. Investors are increasingly focusing on what is termed "asset concentration" or the percentage of total assets in a single facility. With the cost of a new nuclear unit frequently reaching $3 billion or more, investors are increasingly concerned that regulatory or other considerations may cause unit shutdowns, which will have a negative impact on the Company's overall financial condition.

Nuclear Units Under Construction. At the present time, the greatest concern of investors centers on completing the nuclear units currently under construction. There continues to be considerable uncertainty about the ultimate cost of these units as well as their schedules for completion. Investors have seen numerous changes in both costs and schedules for virtually every unit under construction. While inflation and high interest rates have contributed to these changes, individual utilities have estimated that evolving NRC requirements have been the cause of over 50% of these increases. Because licensing requirements remain unstable, investors have little confidence that cost and schedule estimates can be trusted.

These regulatory uncertainties have had negative effects on utilities with nuclear units under construction. Standard & Poor's notes that 11 of the 14 utility bond rating downgrades to date in 1983 were "strongly influenced by credit stress associated with nuclear construction". Lower bond ratings represent higher costs of capital which ultimately result in higher rates to the consumer. Improved licensing procedures should enhance the ability of these utilities to complete the units currently under construction.

Uncommitted Nuclear Units. Looking beyond the current cycle of nuclear construction, we are concerned that, without greater certainty about nuclear licensing regulation, the electric industry will not be able to embark on any future nuclear construction with the expectation that it can be financed at reasonable cost. We note the numerous cancellations of nuclear units in recent years, many of which were caused by financial concerns. The continually changing NRC groundrules in the post-TMI period have created such uncertainties about ultimate costs and durations of construction periods that neither utility managements nor investors will voluntarily enter into new nuclear units which have such high risk.

3. Investors' View toward the Licensing Process

Like anyone, investors dislike uncertainty and avoid risk. For utility investors, one of the greatest concerns is "regulatory risk", or the risk that regulatory decisions will impair the financial health of the utility industry and thereby decrease the value of the securities they hold. There are many sources of regulatory risk. Although the most visible type relates to regulating the rates charged by utilities to its customers, investors are also concerned about the regulatory risk resulting from the NRC regulatory process and specifically the perceived instability and unpredictability of NRC actions. This is of concern to investors because of its direct effect on the construction programs of the utility industry.

We believe that investors are concerned about the constantly changing NRC requirements as they relate to "backfitting" for units under construction as well as for existing units. Although there have been some signs of improvement from the NRC in recent months, basic legislative changes are necessary to assure greater predictability in nuclear regulation. To the outsider, it appears that the NRC's regulatory system has evolved in an undisciplined manner. Investors would like to see the NRC stabilize the apparent randomness of its requirements. Changing NRC requirements result in delays, cost increases and uncertainty and make it very difficult for investors to assess risk and make their investment decisions.

Stabilization and greater predictability of the nuclear licensing process through nuclear licensing reform legislation will make the business of nuclear utilities more predictable and attractive to investors and will make it easier for these companies to raise needed capital. Over time this will reduce the cost of capital for these utilities. Consumers should benefit from reduced capital costs as well as the avoidance of costs associated with unnecessary backfitting of nuclear facilities.

Conclusion

In closing, we support Congress' efforts to establish an improved, more stable nuclear licensing process. We are encouraged by the NRC and DOE consensus that the current nuclear licensing process is deficient and that it must be reformed. There is a definite need for "red-tape cutting" legislation which will add predictability to the system. Legislation which directly addresses the problems of a lengthy, unpredictable NRC licensing and regulatory process will be well-received by investors and should improve the capital formation process for utilities involved in nuclear generation.

Testimony of

Eugene W. Meyer

KIDDER, PEABODY & CO. INCORPORATED

Members of the Subcommittee of the United States Senate dealing with Nuclear Regulation:

It is my privilege to appear before you to comment on Senate Bills 893 and 894 which deal with the subject of reforming the law which guides the deliberation and findings of the Nuclear Regulatory Commission.

My name is Eugene W. Meyer. I am a member of the Management Committee and the Board of Directors of Kidder, Peabody & Co. Incorporated. I am Director of the Special Finance Division including the Electric Utility Finance Group, the Natural Gas Group, the Alternate Fuels Group and the Telecommunications Group. My qualifications are listed in Appendix A to this testimony.

S893 and S894 are long overdue attempts to achieve control over the nuclear licensing process. This intent is critical to the completion of those nuclear electric generating units still under construction, in addition to any future the nuclear generating industry may have in the 1990's and the 21st century.

No industry has been faced with raising as much capital over the past 15 years as the electric utility industry. As the ravages of inflation took hold in the late 1960's and continued almost unbridled until the present time, the electric utility industry was forced into a vicious cycle of inflated costs, high interest rates, poor performance for stockholders, increasing rates for customers and, therefore, a lower usage by customers. From the standpoint of investors, the uncertainties (risk) far outweighed the returns these companies were able to earn.

Without going into all of the problems in detail, suffice it to say that those utilities who undertook the construction of nuclear plants produced the poorest financial performance. The very capital intensity of nuclear plants subjected those companies to the most deterioration in credit ratings and the most dilution from the sale of new common stock at prices below book value.

Careful and detailed reading of rating agency publications and observations of the poor market/book ratios of nuclear intensive utilities indicates that the uncertainties surrounding nuclear power are costly indeed.

There are uncertainties surrounding any capital intensive venture such as an electric generating plant. First among these uncertainties is whether regulatory authorities will allow the facility in rate base and allow it a full rate of return. Second is the technological risk. Third is the demand risk. Fourth is the environmental risk.

In the case of a nuclear generating station, however, there is the additional risk of numerous government agency approvals which must be given by various Federal, State and Local government bodies and which are subject to constant overturning resulting from unending hearings. These uncertainties have resulted in no new project-financed nuclear plants, on a long term basis, since the Yankee plants.

No new orders for nuclear plants have been issued in three years and there is no way to imagine that any new orders will be placed in the years of this decade ahead.

It is my judgement that either S893 or S894 is a step in the right direction toward reducing the regulatory uncertainties surrounding nuclear power. Standardized equipment and decisions on siting, construction, safety and operation are essential before any important amount of funds are dedicated to a nuclear plant in the future. Indeed, this is true of any new generating plant whether fueled by coal, oil, gas or water.

S893 and/or S894 would improve investors' attitudes toward nuclear power. Hopefully, the improved attitude would be sufficient to attract enough capital to finish those nuclear units under construction. It should be clear to the Senate, however, that neither S893 or S894 will result in new orders for nuclear generating plants. There is no way that state regulation will allow a return high enough to justify the risks of nuclear power to utility managers or utility investors. This may well be true of all large scale generating units regardless of how fueled, at least for the balance of this decade, so serious is the problem.

In summary, S893 and S894 are indeed promising for the long term future of nuclear power in this Nation. The major problem with the future of nuclear power, however, is the collapse of contract law which these bills do not address. As a result rebirth of the nuclear industry in the United States should not be expected as a result of these Bills.

QUALIFICATIONS

I studied at both the University of Iowa and Valparaiso University, graduating with a Bachelor of Business Administration Degree from Iowa in 1960. I joined Investors Diversified Services, Inc., Minneapolis, Minnesota, as a junior security analyst in 1960, pursuing the analysis of the electric utility industry. Later in 1960, I became senior electric utility industry analyst for IDS, and in 1964, Manager, Utility Investments, including electric, gas and telephone companies. In 1966, I joined Panhandle Eastern Pipe Line Company as Director of Financial Research and in 1967 moved to Tucker, Anthony & R. L. Day as Director of Research, becoming a general partner of that firm on January 1, 1969. I have been a Vice President with Kidder, Peabody since January 1, 1971, a member of the Board of Directors since January 1, 1973, and a member of the Management Committee since January 1, 1980. I am a member of the New York Society of Security Analysts, where I served a three-year term on the Utility Program Committee. I am a Chartered Financial Analyst, having received that designation from the Institute of Chartered Financial Analysts in 1966.

Furthermore, I have participated in the John Childs' Utility Seminars and Regulatory Seminars as a guest lecturer on the subjects, "Financial Policy from an Institutional Common Stock Buyer's Point of View", "Security Analysis", "Investment Banking" and "Dividend Policy". In addition, I have delivered addresses at various conferences of the National Association of Regulatory Utility Commissioners, the Financial Analysts Federation, American Statistical Association, American Gas Association, New England Gas Association, Southern Gas Association, Public Utilities Buyers Group, Electric Council of New England, the Southeastern Electric Exchange, the

New York State Utility Executives Association, the National Association of Auditors, Comptrollers and Treasurers, the Edison Electric Institute National Convention, and the Rutgers University Conference on the Environment and the Energy Crisis. Since 1971, I have presented testimony in numerous rate proceedings before 54 regulatory commissions including: Alabama, Arkansas, Arizona, California, Colorado, Delaware, the District of Columbia, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Rhode Island, South Carolina, Tennessee, Texas (Railroad Commission and the Texas Public Utility Commission), Utah, Vermont, Virginia, Washington, Wisconsin, Wyoming, the Federal Power Commission, the Federal Energy Regulatory Commission, the Nuclear Regulatory Commission and the City Councils of Dallas, El Paso, Fort Worth and Waco, Texas and New Orleans, Louisiana, the District Court of the Parish of East Baton Rouge, Louisiana and the District Court of Harris County, Texas. I have also testified before the Subcommittee on Energy Conservation and Regulation of the U.S. Senate Committee on Energy and Natural Resources concerning electric utility rate reform, before the U.S. Senate Subcommittee on Anti-Trust and Monopoly Affairs concerning a bill designed to force the separation of combination utility companies, before the Securities and Exchange Commission in the Pacific Lighting divestiture proceedings, before the U.S. Price Commission in the public hearing on utility guidelines and three times before the U.S. Senate Committee on the Interior and Insular Affairs in its continuing investigation of the Nation's energy problems. I was also a member of the

Electric Utility Advisory Committee and the Energy Advisory Committee to the Federal Energy Administration.

As Director of the Utility Corporate Finance Department of Kidder, Peabody & Co. Incorporated, I am engaged primarily with raising new capital for the electric, gas and telephone industries. My duties entail intensive research, assistance and guidance in negotiated public offerings, direct placements of utility securities, and competitive bidding. I am responsible for price negotiations in all utility offerings where Kidder, Peabody is chosen to manage or co-manage the transaction.

Kidder, Peabody is engaged in investment banking, securities brokerage and investment advisory services. The firm is a member of the New York Stock Exchange, the American Stock Exchange and other principal securities exchanges. In the field of investment banking, the firm acts as the manager or co-manager of a substantial volume of public offerings of first mortgage bonds, debentures, preferred stocks and common stocks in many different industries. We also participate as an underwriter and distributor of security offerings managed by other investment banking firms. In addition, the firm is active in negotiating direct placements of security issues with institutional investors.

Since 1970, Kidder, Peabody has acted as the managing underwriter or as the co-manager of public offerings and private placements of corporate securities aggregating over $81.0 billion, making the firm one of the largest investment banking houses in the country during this period. As measured by the volume of business transacted on the New York Stock Exchange, Kidder, Peabody is among the larger securities brokers; it is also very active in the trading of unlisted securities in the over-the-counter market.

So far as bonds, debentures and preferred stocks are concerned, our clientele is comprised primarily of institutional investors since it is this type of account which provides by far the largest source of demand for fixed income securities. So far as common stocks are concerned, the type of clientele is far more varied. We do a substantial business both with individuals and with institutional investors — that is to say, with funds which are administered by professional investment managers. These would include trust companies, investment trusts, insurance companies, pension funds, charitable institutions and the like.

Currently, the firm has over 1,600 professionally trained securities personnel in 72 offices in this country and abroad, serving both individual and institutional investors.

Testimony by Governor Bruce Babbitt
to the Senate Subcommittee on Nuclear
Regulation - July 14, 1983

Mr. Chairman and Committee Members:

The Licensing Reform Act of 1983 proposed by the Nuclear Regulatory Commission would, if enacted, dilute the Commission's mandate to assure the safe construction and operation of nuclear power plants. By authorizing one-step licensing and precluding subsequent review of many issues, Section 185 of the Commission bill would tend to restrict the authority of the Commission to oversee, within the licensing process, the critical problem of utility management and operation of nuclear facilities. Problems associated with utility management and plant operation ought to be the subject of more rather than less regulatory oversight.

The one-step licensing feature, as it applies to design and construction permitting, is a positive step. Over the past twenty years, nuclear power technology has begun in some measure to mature and stabilize with a corresponding move toward replication, standardization and more comprehensive pre-construction design. One-step design and construction licensing is a reasonable response to these changes.

The Commission bill, however, fails to distinguish sufficiently the major regulatory differences between licensing a machine and licensing the utility organization to operate that machine. On one hand, the technology of nuclear reactors has begun to stabilize as the result of some twenty years of experience, and on that basis the move toward early design approval is a reasonable reform. On the other hand, it is an unhappy but inescapable fact that the people and institutions who run the machines show much less maturity and reliability. The relaxation of regulatory procedures in this area is unwarranted.

The various inquiries in the wake of Three Mile Island, including hearings by Congress, all identified inadequate utility management as the greatest threat to the safe operation of nuclear plants. Since that time, many utilities have failed to build and operate nuclear reactors with a sustained level of technical competence. The dreary litany of quality assurance problems during construction, such as concrete voiding at Marble Hill, soil compaction problems at Midland, seismic design failures at Diablo Canyon, quality assurance problems at South Texas, and the complete organizational breakdown at Zimmer, are one manifestation of the problem. The record on post-construction operational competence is no more encouraging. The continuing crisis at General Public Utilities four years after Three Mile Island is one example. The scram failure at Salem Unit Number 1, involving a failure of routine maintenance, is another. The lengthening list of Commission fines levied for management failures provides many other examples.

The crucial safety question is what impact the proposed changes in the licensing process will have upon remedying these deficiencies and strengthening the culture of nuclear management. The creation and maintenance of technical excellence is concededly an elusive issue. International Business Machines has it. So does the Boeing Aircraft Corporation. Admiral Rickover succeeded in instilling technical excellence in the nuclear navy.

The plain fact, however, is that nuclear utilities have not achieved a culture of technical excellence. Too many nuclear utilities still operate in an environment of technical indifference and careless management. It is careless management, not reactor design, that is the chief source of risk in the nuclear industry. And licensing reform must respond to that fact.

Comprehensive one-step licensing, however valid for reactor design, will probably weaken the regulatory system and render it even less capable of controlling institutional and management problems. Section 185(b) provides for a combined construction permit-operating license if, in the words of the Commission "the application contains sufficient information to support the issuance of both the construction permit and the operating license." Section 185 is given force by the limiting language of Section 189 which precludes the reexamination prior to start-up of issues previously addressed in the CP-OL hearing.

Commissioner Gilinsky has already explained to the Committee why a complete operating review immediately before power operation is necessary to assure that the utility has built up its technical staff, mastered operating procedures, and instilled a culture of technical competence. One does not field a good football team simply by bringing together draft choices, coaches, and a playbook; the individual parts must come together and jell as a team that is something more than the sum of the individual pieces. It is imperative that the Nuclear Regulatory Commission certify the ~~compliance~~ competence of the management and operations ~~of the~~ team; such a review and certification cannot effectively be made at the design licensing stage; and the proposed legislation would apparently preclude that review at the very time that it should be made, at the threshold of power operation.

Any new legislation ought to specify that the Commission must undertake a comprehensive review of the management and operating organization immediately prior to power operation. Any legislative amendments ought to clearly indicate that management licensing is not a perfunctory act owed to a utility which has had the good judgment or plain luck to hire competent architect-engineers and constructors who have produced an acceptable piece of hardware. (In this respect, the Department of Energy proposal for a perfunctory unilateral certification of readiness by the utility prior to start-up is an even greater threat to nuclear safety.)

If anything, the Congress ought to consider expanding the reach of utility management licensing. The basic problem is that any utility that wanted a nuclear plant badly enough got one, whether or not it had the capacity to run it. The current licensing process does not forthrightly address the threshold question of whether an applicant utility has the management sophistication and resources to enter onto the nuclear licensing track. These issues must be finally reviewed at the operating licensing stage; however, by that time billions of dollars have been invested in plant construction, and the threat of withholding an operating license for basic management inadequacies is somewhat hollow.

The Nuclear Regulatory Commission ought to be required by law to make a formal (but not necessarily adversary) decision at the front-end of the licensing process whether the utility has the management strength and technical competence to even enter into the nuclear licensing arena. It is tempting to postulate that the jerry-built management structure that produced the Washington Power Supply System debacle might have been avoided by a couple of well-placed questions from a Commission empowered to act as a gatekeeper at the beginning of the licensing process. And perhaps the troubles at South Texas and Zimmer might have been avoided by a few preliminary findings about the realism of a non-nuclear utility going into business with an architect-engineer and constructor with little previous nuclear experience.

In sum, the licensing reform bill offers a few genuine if minor improvements in technical licensing, changes which are overshadowed by an apparent retreat on the issue of management oversight. A genuine reform bill would forthrightly address the real issue of the obligation of the regulatory system to assure quality management and a culture of technical competence in all nuclear power operations. Unless these issues can be worked out, it would probably be better for utilities, consumers, and nuclear safety to defer legislative change to another time.

Thank you.

Testimony Before
The Subcommittee on Nuclear Regulation
of the
Committee on Environment and Public Works
by Nicholas D. Lewis
July 14, 1983

Mr. Chairman and members of the committee, my name is Nicholas D. Lewis and I am the Chairman of the Washington State Energy Facility Site Evaluation Council. The council is a one-stop licensing agency for all major energy projects in our state and we have, at the present time, seven nuclear projects in various stages of the application and construction process under our jurisdiction. The state of Washington has a great deal of existing expertise in the areas of environmental impact analysis and other site related issues. In certifying facilities the council regularly establishes water and air quality standards, develops emergency response plans, monitors plant construction and operations, and determines mitigation procedures for impacts on fish and wildlife, vegetation, soil, air and water and, last but not least, impacts on people. Thus the state of Washington is already prepared to deal with many of the issues discussed in Senate Bills 893 and 894.

In response to your questions concerning the existing NRC licensing process, I would give a mixed verdict--all from the perspective of an interested state official. I believe that the NRC process has been predictable and stable over the past few years. A potential party to a licensing proceeding certainly ought to be able to judge what they are undertaking. Unfortunately, in recent years the NRC process has become all too often predictably lengthy, complex, legalistic and in controversial situations, nondecisive.

As to the effective opportunity for public participation, I would give the commission relatively high marks in providing opportunities for well financed public interest groups with talented legal counsel, and quite low marks for individual citizens who wish to express their views. Non-parties often find the time, place and format of the NRC hearings to be a great mystery and are unquestionably at a disadvantage as a non-legal participant in a highly legal process. As an example, I recently appeared before an Atomic Safety and Licensing Board in Washington State to make a formal statement on behalf of the Governor. I was grouped with other individuals making limited appearances before the board. Despite the fact that I made a lengthy and pointed statement, neither the content nor even the fact of my appearance was reflected in the board's order issued at the conclusion of the hearing. We have now filed for formal status as an interested state and will be in the future represented by our attorney--all at considerable expense to the public.

The quality of NRC decisions is generally good; if long in coming.

The quality depends on the individuals involved and their familiarity with the project. Too often commission representatives are making decisions without adequate information at too great a distance from the actual work. I see the quality of decision making improving as the commission devotes more and more effort to delegating decisions to the regional offices and on-site representatives.

The commission provides a good means of resolving health and safety questions. Environmental, emergency response and similar site related issues are much better handled by appropriate state and local authorities; yet much of the intervention in commission proceedings involves these site related and environmental issues for which the commission has limited knowledge. Further, the commission's hearing boards rely on information brought to them by the parties to the proceeding and make little attempt to gain the independent expertise of officials in the state who deal with environmental questions on a day-to-day basis.

In the commission's defense, I would like to say that we have been able to make great progress in creating a cooperative working relationship with both the commissioners and staff. The NRC's Region V office in San Francisco is exceptionally cooperative in coordinating with us on construction inspection and related matters. We have developed landmark agreements with the commission for the development of joint environmental impact studies and joint licensing hearings for a nuclear power plant project under consideration at the present time in Washington State.

Encouraging as this progress is, it has come slowly and only as the result of a great deal of hard work. Revised legislation could do much to create an improved atmosphere for Federal/state cooperation and greatly improved regulatory efficiency and effectiveness.

I would like now to turn my attention to some of the specifics addressed in these two pieces of legislation which are of particular interest to the state of Washington.

Need for Power -- Both S.893 and S.894 suggest that the need for power question is best handled by a local, state or other certified entity. S.893 also includes delegation of decisions concerning alternative sources of generating capacity. We would support delegating decisions on both points to the state level. However, provisions in S.893 require that commission procedures be followed by the state in assessing power needs. S.894 has preferable language which leaves methodology to the state's discretion.

The state of Washington is a member of the Northwest Regional Power Planning Council, an organization which was created for just this purpose. The council has published its first plan which describes the region's energy needs and the options for meeting those needs over the next two decades. Provision for regularly revising the plan has already been made. It would appear that many states, in addition to Washington, already have the capability to address the need for power question, with likely greater accuracy than the Federal Government could do it for them. Having the NRC dictate the manner in which a state determines need for power does little to make siting and licensing of nuclear facilities more efficient; efficiency will be gained by taking a process which is already in place in a state and using it.

The bottom line is that when a state is willing and able to determine its power needs, and the most effective combination of resources to meet those needs--Federal preemption should not be imposed.

Environmental Issues -- Neither S.893 nor S.894 provide for state participation in the development of environmental impact analysis or in site related reviews; in fact, both bills are very weak in this area. States are generally far better qualified to assess environmental impacts within their borders than is the Federal Government. The council, which I chair, is intimately familiar with each and every site and is well equipped with experts in all the necessary disciplines to evaluate impacts on a site and to determine appropriate mitigation procedures. Washington State already has a good record for preparing joint Federal/state environmental impact statements. We issue both water quality (NPDES) and air quality permits under joint Federal/state authority. The ability of states to deal more effectively with environmental concerns needs to be directly addressed in any new legislation. If efficiency in the licensing process is truly what we are after, delegation of environmental and site related matters to states willing to take on that responsibility would be a major step in the right direction.

Standardization -- Nuclear power plant standardization is a good concept and one which is important to any legislation such as this which strives to improve the efficiency of the licensing process. In Washington State, of our nuclear projects still under construction, each is of a different design. The concept of custom building nuclear plants is contrary to any attempt at achieving construction on schedule and at cost levels which are acceptable. Instead of using the assembly line technology developed in this country, we are using the opposite. The net result is a rejection by the public of nuclear power--not on the basis of safety or environmental issues, but because of costs associated with this custom built mode of construction and design.

The fundamental question which must be asked is why are we building nuclear power plants--it is not to increase employment, nor experiment with new design, but to provide reasonable cost power to the ratepayer/citizens we serve.

Early Siting Provisions -- Lastly, the early siting provisions which appear in both pieces of legislation, if coupled with standard plant design, could substantially reduce the lead time now required to obtain a construction permit. However, a ten-year permit which can be renewed for an additional 5-10 years can become a 20-year permit and may result in the locking up of key resources if the traditional western concept of first-in-time is followed. Can we in actuality set aside X units of water quality on any given river for 20 years at the expense of other potential uses? The problem is a difficult one but is a matter which must be addressed if the early siting concept is to be realized.

In summary, provisions of both proposed bills could provide needed improvements to the nuclear power plant licensing process while continuing to protect the health, safety, environmental and public participation issues which have long been considered important. Appropriate cooperation between Federal and state governments could do much to assist in meeting these goals.

Thank you for the opportunity to offer this testimony to the committee. I would be pleased to respond to your questions.

TESTIMONY

BY

PETER A. BRADFORD

CHAIRMAN, MAINE PUBLIC UTILITIES COMMISSION

CHAIRMAN, NARUC SUBCOMMITTEE ON NUCLEAR ISSUES

FORMER COMMISSIONER, NUCLEAR REGULATORY COMMISSION

I very much appreciate the opportunity to renew acquaintances with this Subcommittee and with nuclear licensing issues.* Today's hearing will represent something like the 20th time that I have testified before the Congress on issues relating to nuclear licensing "reform". (For an early example, see Appendix A. While specific provisions of that earlier legislation differed, many of the overall issues - including the need for the legislation at all - were quite similar.)

These past hearings divide themselves roughly into two groups. The first set of hearings concerned the Department of Energy's nuclear Siting and Licensing Act of 1977, 78, and 79 - an ill-fated effort that terminated abruptly on the morning that the then Secretary of Energy Schlesinger was urging expedited licensing on a House of Representatives subcommittee at the very moment that Chairman Hendrie was advising Governor Thornburgh of Pennsylvania that pregnant women and young children should no longer be within five miles of Three Mile Island.

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* In general, where this statement uses "NARUC" or "we" it is intended to be reflective of my estimate of a state commissioners' consensus. Where it uses "I", I am speaking for myself.

The second set of hearings came to be known as The Great Licensing Delay Hoax of 1981. That endeavor, you may remember, commenced with the purported discovery by the industry and the Administration that some twelve plants were facing licensing delays totalling more than 100 months - at an estimated cost to the national economy of billions of dollars and millions of barrels of oil. Despite the fact that the claims both of delay and of cost proved not merely to be inflated but to be utterly wrong, the NRC's temporary licensing authority (in a form much improved by the efforts of this Subcommittee) was enacted by the Congress as a result of the hoax. In fact, no plant was delayed by hearings, and and the temporary licensing authority has never had to be used.

Today's hearings thus are part of the third major congressional review of the NRC licensing process in the last six years. Much can be learned from scanning the earlier hearings to see just whose testimony provided reliable guidance to the Congress and whose did not, for many of the same companies, agencies, parties, and even individuals who have testified at the current hearings have come before you in the past with similar exhortations. If it does not become clear to some of them at some point that there is a price to be paid - in credibility if nothing else - for repeatedly misleading the Congress, you can expect to be periodically put through these endeavors indefinitely.

It is also important to keep in mind one other, more distant piece of history. The current NRC adjudicatory hearing process was developed as part of a bargain from which the nuclear power industry gained a great deal in the late 1950's. In return for accepting extensive federal hearings, the industry was exempted from any state or local regulation of radiological health and safety and received the limitations on liability that are set forth in the Price-Anderson Act. Thus, citizens in any community in which a nuclear facility was to be located - a facility with a remote but not nonexistent chance of destroying the community - gave up both local regulation of the facility and the additional financial and safety assurances that normal insurance industry operations would have brought (assuming that coverage would have been available). In return they got a commitment to the full panoply of trial-type procedures as part of the federal licensing process. Now that memories have faded, the industry is seeking to revoke its share of the concessions in that original bargain. To point this out is not to say that the licensing process must forever remain unchanged in all respects. Still, it is an important history in the context of changes would significantly reduce public participation in future nuclear power plants licensing proceedings.

Putting history aside, let me note that I am appearing today on behalf of the National Association of Regulatory Utility Commissioners.

NARUC has a diverse membership. It has passed no resolutions concerning this legislation. I have circulated the points that I intend to make in my statement to the members of the Nuclear Issues Subcommittee that I chair and have heard no objections. However, you should be aware that there may be other commissioners who would not concur completely in the points that I am about to make. NARUC at this time neither endorses nor opposes either of the bills before you but would ask that you consider the following points.

NARUC's primary involvement with nuclear energy comes from the fact that many of its member commissions regulate electric rates. As a result, NARUC has a strong interest in the reliability, predictability and economy of nuclear power. We also have an interest in being sure that the nuclear regulatory process produces neither procedural nor substantive results that discredit utility regulation in general. Furthermore, many of our members play a major role in setting state electrical energy policy, and, as such, we have an interest both in having a nuclear option available if we need it and in being able to participate in a fair and efficient nuclear licensing process.

As economic regulators, NARUC members are interested in holding long-term costs down, but we have seen far greater cost impacts from nuclear mishaps such as Three Mile Island, steam generator tube degradation, WPPSS, quality assurance failures, and construction cost overruns than from the NRC licensing process.

From our standpoint, what nuclear energy needs most is a prolonged period of accident-free and fiasco-free operation of the plants now in service and those to be licensed soon. The present readjustment from the rush of the early 1970's to license hundreds of reactors while commercializing breeders and reprocessing provides a welcome opportunity to address such issues as waste management and the stabilizing of both the technology and its regulation. Efforts to stimulate artificially a demand for new reactors through legislation or public relations campaigns or subsidies are at best a mischievous distraction and at worst a harbinger of future shortcuts and trouble.

We are under no illusion that the problems of nuclear power can be solved by licensing reform legislation. Indeed, the wrong kind of "reform" would only increase public skepticism and thereby make matters worse. The fact is that our current licensing process has licensed more nuclear capacity than the French, the Japanese, the Germans, and the Soviet Union combined. Furthermore, contrary to a popularly held myth, the public hearings aspects of the licensing process has never delayed a single nuclear power plant's operation by a single week. Indeed, one reads the many pages of industry, NRC, and DOE testimony in vain for a single specific illustration of a licensing delay (or an unnecessary backfit) that this legislation would cure.

We do not mean to denegrate the efforts of the drafters of S.893 and S.894 to produce useful changes. Both early siting and standard designs are potentially useful measures in the event that orders for nuclear reactors should one day reoccur. However, it is important to note that these measures can, as was pointed out in previous years, be substantially encouraged within the NRC's existing statutory authority. Indeed, NRC provisions exist to encourage both. The modifications needed to expand this authority are relatively minor ones and do not require the other provisions that are presently before you. The same can be said of the commendable desire to require that much or all of the plant design be available at the time of construction permit hearings. This provision, however, would not eliminate the need for operating license hearings for reasons that I will discuss in a moment.

I should also note that because we believe the safety of nuclear power plants and the credibility of the nuclear licensing process to be essential to the economic viability of nuclear power, we would not support those aspects of the pending DOE legislation (S.894) that limit the ability of the NRC to make needed safety modifications to existing plants or that curtail the ability of states or citizens to participate in hearings at the operating license stage on significant safety issues.

In addition, we feel that this legislation would be more balanced and more responsive to the real public concerns about nuclear power if it addressed such items as the need to raise the liability limits in the Price-Anderson Act from their clearly outdated 1957 levels, the need for a safety issue resolution process at least as firm as the NRC's commitment to meeting licensing deadlines, the urgent need for accurate need-for-power assessments, and the unanimous recommendations of the Kemeny Commission and the NRC's own Special Inquiry Group for the provision of a public counsel's office or other assistance to intervenors and intervening states in order to better focus their concerns on genuine safety and environmental issues.

In this regard I should note, on my own behalf, that DOE's attempt to use the Kemeny and NRC post-TMI investigations in support of S.894 is a breathtaking perversion of both of those reports. The fundamental message of both documents was that the NRC should emphasize increased safety above expedited licensing and that licensing reform should include, as a high priority, assistance to responsible intervenors whose contentions were effectively stifled by inadequate resources. Neither the DOE nor the NRC legislation reflect these priorities.

It is important to stress that NARUC's basic concern is with the economics of nuclear power. We have no extensive nuclear safety expertise. However, we do have extensive familiarity with administrative law, administrative processes, and public concerns regarding energy issues. Against this background, we feel that it is important to stress that the NRC hearing process ranks very low among the issues that have brought nuclear power to its present situation. NRC hearings did not cause Three Mile Island. NRC hearings did not bring about the cancellation and default at the WPPSS Units. NRC hearings had nothing to do with the quality assurances breakdowns at Diablo Canyon and Zimmer. NRC hearings are not causing the Midland containment to sink. NRC hearings are not even at the bottom of the cost overruns at Shoreham and Seabrook. Indeed, when a unit such as the recently completed St. Lucie plant in Florida avoids the problems that have bedeviled these other units, it is clear, as Senator Mitchell suggested to Secretary Hodel on May 26, that the NRC hearing process in isolation is not a source of delay at all.

The NARUC member agencies are fully familiar with the problems of using trial type procedures to resolve complex issues of law and fact. However, we also recognize that centuries of Anglo-Saxon juris prudence have provided no better ways to deter or detect the false or misleading testimony that some witnesses from all sides may attempt to use.

Most of nuclear energy's real problem situations would tend to support the proposition that, if anything, the NRC process of nuclear surveillance has been too lax rather than too stringent. The problem that Congress should address first is not that the United States has licensed too few plants too slowly; it is that we have licensed and made large financial commitments to too many plants too quickly. That is why we now have a landscape dotted with 9 figure cost overruns, a 9 figure accident, 8 figure cancellations and 8 figure mishaps in such areas as steam generator tubes, pressure vessels, emergency plans, scram systems, and quality assurance. Significant problems have been found after millions of dollars (hundreds of millions in some cases) have been committed to the power plants. These are the types of situations that NARUC would like most to avoid.

Backfitting, as distinguished from the NRC licensing hearings, is a serious problem for NARUC ratesetting agencies and for consumers because of its unexpected economic impact. However, we recognize that the backfitting process is, in most cases, an inevitable result of the rate at which the nuclear industry has grown. Given that most of today's plants were licensed on the basis of very little operating experience, the lessons of events such as the Brown's Ferry Fire, Three Mile Island, and the steam generator tube and quality assurance failures will have to be implemented in plants that are already built.

The Nuclear Regulatory Commission has made extensive modifications to its backfitting process in the last three years. Barring another major accident which would inevitably necessitate a rapid and somewhat chaotic response, the nuclear industry's legitimate concerns have already largely been addressed. Legislation in this area is not needed, and it would be an unwise contravention of the Kemeny Commission's warning against encouraging an NRC attitude that seemed to subordinate safety to power plant licensing and economics.

NARUC would like the backfitting process to be as rational and as cost-conscious as possible, but we cannot support an effort to put an arbitrary lid on it. To do so is to invite other accidents, and we have learned that the only thing more expensive than fixing the plants on the basis of engineering judgment and relatively minor operating events is having to deal with the consequences of the more serious accidents.

The same points that we have made regarding backfitting can be made in general terms about the need for an opportunity for hearing at the operating license stage. If, as is not now the case, construction permits were based on complete design information, then the operating license hearings could be limited to significant new issues plus compliance with the construction permit. In this context, I think the current DOE provisions (S.894) on res judicata and collateral estoppel are a commendable improvement on the DOE efforts of 1977, 78, and 79 (see Appendix A, pp. 6-8). However one need only look at the number of plants (Zimmer, both Diablo Canyon Units, and Midland) at which significant problems have come to light with the plants more than 90% complete to realize that operating license hearings cannot be eliminated simply because a design has been approved any more than, as NRC Commissioner Gilinsky put it, a college degree can be granted on the basis of freshman year registration. Furthermore, as noted earlier, these NRC hearings have never delayed the operation of a single nuclear power plant for a single week.

In summary, NARUC supports those aspects of this legislation (early siting and standard design) that would have a genuinely beneficial effect on the nuclear siting and licensing process. However, we feel that legislation that singles out the NRC licensing process without addressing other more serious problems with nuclear power will ultimately send the wrong message to both the public and the nuclear industry. We would therefore urge the deletion of the backfitting provision, the retention of operating license hearings, and the inclusion of the measures mentioned on page 7 above.

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Let me reiterate my gratitude and that of NARUC for the invitation to testify on these important issues. NARUC does support a balanced reexamination of the nuclear licensing process so long as it does not undermine either the incentives for safe and reliable operation or the basis for renewed public confidence that public concerns are being fairly and thoroughly dealt with. To the extent that the foregoing testimony relates directly to that concern, I feel confident that I speak for the overwhelming majority of the NARUC membership. Since the give-and-take of the question and answer process allows less time for reflection on the likely NARUC consensus, I think that I should indicate now that my answers to your questions should, to the extent that they cause alarm, be regarded as my own.

APPENDIX A

TESTIMONY OF PETER A. BRADFORD
COMMISSIONER, U.S. NUCLEAR REGULATORY COMMISSION

I would like to be able to support this bill, or at least not to oppose it. A great deal of time and effort by people whose judgement I respect has gone into it. Furthermore, it contains some provisions that seem to me to be useful and others that are no worse than harmless. Under these circumstances, I would not oppose the overall thrust of the bill were it not for three provisions. The first limits the NRC's use of adjudicatory hearings in matters arising under the National Environmental Policy Act; the second provides for extensive construction activity to go forward under some circumstances without the need for the plant in question having been specifically determined; the third states that issues that could have been raised in a previous proceeding may not be raised in any subsequent proceeding even if they were not raised and are therefore still unresolved.

Before returning to these three concerns, I want to speak about the context in which this legislation arises, for that context says a lot about what the bill should contain. The proposed legislation comes from an Administration commitment to the effect that "Reform of the nuclear licensing process is clearly needed. The present process is unsatisfactory to all participants: industry, intervenors, and the federal government. The President . . . . has proposed that reasonable and objective criteria be established for licensing and that plants that are based on a standard design not require extensive individual licensing."

Together with this Presidential commitment, the legislation comes before the Congress at a time when demand for additional nuclear power plants has declined sharply. Consequently, some suggest that the legislation is needed to send the industry a message of encouragement. This does not seem to me to be a legitimate legislative function, but it is in any case amply fulfilled this year as in many others, by other specific legislation and by the still substantial nuclear share of the federal energy research and development budget.

Lastly, the legislation was shaped during a time when the licensing process was under a cloud resulting from a series of court judgements to the effect that NRC procedures were not adequate to deal with the legally required issues. That cloud has since been lifted by the Supreme Court, so there is less need than there ever was for legislative modification of the recent lower court decisions.

* * * *

As the Chairman's statement indicates, I support most of the provisions of this bill. I do not feel that it addresses some of the most important issues confronting nuclear power, but the provisions on early siting, standardization, and intervenor funding clarify and strengthen Commission authority in useful ways. The Commission has also indicated support for the delegation of NEPA responsibility, though in a form different and less complicated than this bill contemplates. Each Commissioner would undoubtedly assign different priorities to these measures, but we feel that they can be so administered as to improve nuclear licensing.

I cannot say the same for the three points that I mentioned earlier and which I will now discuss specifically.

First, Section 103 of the bill would produce a significant change in the Commission's NEPA hearings. It would provide that NEPA related issues should be heard in informal hearings, that is without such basic tools as discovery, subpoena powers, cross-examination, or witnesses put under oath. Only the factual and legal issues that the licensing board deems "essential to the outcome of the proceeding" would be heard in an adjudicatory format. This section is unfortunate for several reasons.

First, adjudicatory hearings, which the NRC currently uses for all contested power plant licensing issues, are a better way to get an accurate assessment of complex factual issues. If they are run effectively, they will not take significantly longer than informal hearings, but they will be a much more reliable decisionmaking tool. They are more reliable because they permit direct confrontation between the views of different parties under circumstances that allow each party a maximum of opportunity to probe the assumptions and the weaknesses of the other's position. Informal hearings, by contrast, allow the parties to make statements that contain untested allegations and assumptions and that need not face cross-examination. Within limits, this favors the witnesses who are most careless with the truth. In any clash of statements the chances of the fallacious ones prevailing, especially if they are sufficiently financed to be repeated by several witnesses, improve in direct proportion to the informality of the proceeding. As one of the officials who must pass judgment based on the records that will be built at these hearings, I ask you in the strongest terms not to change the current adjudicatory format.

Reliability is not, however, the only basis for my concern. The provision does not make all NRC power plant licensing hearings informal. It does so only with respect to hearings under the National Environmental Policy Act. Unfortunately, the distinction between NEPA hearings and health and safety hearings rests on a distinction between environmental and safety issues. While that distinction has not posed a problem in NRC proceedings to date, it is necessarily artificial, for human health is inseparable from the environment. Furthermore, some environmental issues come before us not merely under NEPA but under other environmental laws which have compelled adjudicatory hearings for all contested issues. If a legal distinction is made between NEPA issues and all others, the question of whether the correct type of hearing has been held will be a new and significant issue for the courts to decide, and Congress will have reopened a variant of the issue that the Supreme Court just told the lower courts to leave alone. The problem is made even more difficult by the provisions of the legislation that delegate NEPA to the states.

A third concern with this provision is that it will vest new responsibility and discretion in NRC licensing boards. They will have to decide what issues arise only under NEPA and are essential to the outcome, and they will have to evaluate and penetrate the imprecisions of the informal record. In vesting such increased discretion, Congress should consider the fact that many of our Licensing Boards are not currently held in high regard. They have some individually excellent members, but as a whole, the Licensing Boards have been strongly criticized by intervenors and industry alike. In addition, these Boards have often been rebuked by the Appeals Boards that oversee their work for failing to comply with fundamental agency decisionmaking standards.

The second provision in the bill that seems unsound to me is the proposed Section 193(e) that allows extensive construction in some cases without a definitive finding that the power is needed. The construction may be considerably more extensive than is contemplated by our current Limited Work Authorization procedure. While the bill provides that the costs of this construction should not prejudice subsequent decisionmaking, such prejudice is almost inevitable. It is simply not likely that a meanginful need for power proceeding, especially one involving alternative sources, can take place if $100 million is already spent on a nuclear plant. No hardship results from requiring a finding of need for the particular unit before construction commences. To do otherwise is to force the Commission and/or the relevant state agencies to choose between declaring very large sums misspent or staging compromised need for power hearings.

While the law addresses this problem by saying that the NRC or the state may prevent early construction, this provision is of little use to concerned citizens if the state and the Commission should not be inclined to take such a step.

The importance of a sophisticated need for power analysis is well illustrated by the situation that has existed in New England in the last two or three years. Utility customers have had to support investment that has produced reserve margins of more than 40% for some utilities. The Connecticut Public Utilities Control Authority has recently urged Northeast Utilities to cut back its commitment to additional future capacity.

Excess capacity produces high consumer costs of its own, and these costs are ignored in the analysis of the costs of delay that are cited as supporting this provision's bias in favor of construction first, questions later.

The third provision that I feel must be modified is in Section 189a(2)(c) found in Section 103 of the bill. It requires that anyone seeking to raise several types of issues at proceedings for construction permits or operating licenses or renewals of permits must show that "no opportunity for hearing" on the issues in question existed at an earlier hearing or that infomation not previously in existence had been discovered. When this Committee heard from the Department of Energy, the claim was made that this concept embodied only the well settled legal principles of res judicata and collateral estoppel and that the effect of this section would be to encourage early resolution of issues. None of those statements is correct.

The legal principles exist, and they are useful, but they are significantly different in normal application from this bill. Furthermore, the bill as written actually encourages concealment rather than resolution of many issues. What *collateral estoppel* and *res judicata* provide is that no party may raise an issue if it has already been raised by any party and decided by the tribunal. Furthermore, current NRC practice already provides that a party is normally obliged to make his contentions known in a timely manner or forfeit them. This bill goes a significant step beyond these principles. It says that a person seeking to raise an issue must, unless he shows "significant *new* information" likely to cause the facility to be in violation of the law or NRC regulations, somehow show that *no one could have raised* the issue at a previous hearing.

A hypothetical example will illustrate just how unfair this provision might be. Let us say that the Public Service Company of Arizona, to pick one at random, follows the early siting provision and gets a site approval in 1983. In 1985 a citizen of New York moves to Arizona and settles near the site. Unbeknownst to him, the NRC is at that time in the process of approving six different standard designs. In 1988, Public Service of Arizona takes one of the six standard designs and starts construction on the site. The hypothetical citizen feels that a different cooling tower would produce less fog and that the transmission lines will have a disastrous impact and should be rerouted. Neither issue was raised in either of the earlier hearings, in which he would not have been involved. Both issues could have been raised but, by design if you will, were not mentioned by the utility or uncovered by the Licensing Board. Under conventional application of *res judicata* and *collateral estoppel*, these issues could still be raised. More importantly they *should* be raised and resolved. Under the legislation before you, they cannot be raised, and the DOE witnesses' testimony that this extraordinary result stems from conventional legal principles stretches those principles past the breaking point. Furthermore, far from encouraging early resolution of issues, this provision as drafted encourages their concealment, for if they escaped unnoticed at the first hearing, they cannot come up again in the absence of significant information not in existence at the time of the earlier hearing. The way to encourage early resolution of issues is to provide that issues *actually considered* in previous hearings may not be relitigated. Taken together with the principle that a party must raise his issues at the appropriate stage of a proceeding or forfeit them, this different standard is needed to make the legislation conform to the testimony of its sponsors.

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As I have said earlier, parts of this legislation are desirable. Intervenor funding in particular is necessary to a full presentation of the issues in some proceedings. To those who say that this proposal favors some "special interests groups" and their views in NRC proceedings, I would point out that our research program, not to mention DOE's routinely contracts for millions of dollars of work that applicants can use directly in their license applications. Indeed, some of this money goes directly to the reactor vendors and architect engineers who will use it in standard design applications. If funding "special interest groups" to help their participation in the licensing process contravenes the intent of Congress, this research needs to be reviewed and redirected.

Committed as I am to intervenor funding and however much potential I may see in early siting and standardization, the Commission can move in these directions on its own, albeit not as clearly as this legislation contemplates. Nevertheless, I would urge that the Congress not enact these gains if it meant accepting the limits on public participation discussed above. Those limitations only make sense if one accepts the view that nuclear power's troubles flow from misguided citizen groups asking too many questions. No responsible study supports this proposition, and several studies rebut it.

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In short, the abridgements on public participation contemplated by this bill are part of a "love it or lose it" attitude toward which some industries, especially energy industries, are inclined as part of efforts to blame their troubles on their critics. Without detracting from the contribution that I hope nuclear power can continue to make toward meeting the world's real energy needs, I would suggest that the industry's troubles come mostly from a different direction - a direction that this bill does not address.

Much of the problem lies with the commitments, pressures and expectations spawned by the grave overestimates of nuclear needs and possibilities that once emanated from the AEC and from ERDA. As bureaucratic and institutional prestige became committed, one almost rational step at a time, to stated and perceived national goals that had very little to do with real national interests, truth and other people's money were the first casualties. The truth took a beating in silenced concerns and rigged or suppressed studies. Conclusions were expressed in assurances of safety so absolute that the industry and the Commission can now be embarassed into shutdowns by occasional showings that assertedly impossible accident sequences are merely very highly improbable. Massive financial commitments were made by utility ratepayers and by taxpayers to a nuclear future clearly in excess of anything that the nation really needed within the time it was to be provided. Alternatives, including some nuclear alternatives, were given short shrift. As criticism grew, those who participated in the initial misjudgements behaved as though openminded reevaluations would be admissions of previous errors. Instead they blamed nuclear power's troubles on delays and losses of confidence caused by its critics, whose patriotism and integrity and allegiance to the American dream were subtly or not-so-subtly called into question.

If one is to understand the ways in which large governmental entities can become over-committed to casual and ultimately self-justifying definitions of national well-being, our energy past is important both as a map and as a warning. The limitations on hearings and issues in this legislation can be described as an extension of that past - a desire to avoid real issues that is based on an ill-informed exaggeration of dimly perceived dangers. The savings in time ascribable to the hybrid NEPA hearings, the omitted need-for-power determination, and the limitations on raising new issues are negligible. The losses in reliability of the hearing process are large. These proposals may offer solace of a sort to those present DOE officials who were frustrated at the AEC by NEPA, by intervenors and by the courts during nuclear power's happier hours five years ago. They have no other logic. They can do very little good and may do considerable harm. Neither this Committee nor the Congress should endorse them in anything like their present form.

STATEMENT OF
ROBERT E. ERB, JR.
ELECTRIC CONSUMER AND
STAFF ENGINEER

BEFORE THE
SENATE SUBCOMMITTEE ON NUCLEAR REGUALTIONS
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON D. C.
JULY 14, 1983

Mr. Chairman, I am Robert E. Erb, Jr., speaking as an electric consumer and previously unemployed technican who worked in many nuclear power generating facilities. I am presently a staff engineer at North Anna Units 1 & 2 responsible for capital improvement costs.

I welcome the opportunity to appear before you today and I commend you and the subcommittee for taking up this important issue at this time.

My interest in this matter stems from my experiences working at eight nuclear power facilities, 17 chemical and manufacturing facilities and many international design offices over the past 19 years. I have felt the growth trends within the nuclear power industry over the past 11 years and have seen myself and many of my colleagues in the unemployment lines in the 1980's due to the reduction of growth in the nuclear power industry.

In addition, as an electric consumer, I have seen my electric bills increase from an average of $30.00 to over $200.00 per month, and in some months to more than my rent payments. This has been attributed mainly to the cost of fossil fuels and the high capital cost attributed with the construction of nuclear power plants. The capital costs include the high interest cost sometimes more than 30% of the total cost of the power plant, mainly due to the extended duration of getting construction permits and operating licenses.

In this report I have submitted, titled "Nuclear Power Plant Licensing Costs the Electric Consumer", I have accumulated the facts that show the need for legislative actions that are needed to stimulate nuclear power growth, reduce unemployment, and reduce electric consumer rates. I ask you to please review it before you make your decisions since I will concentrate my testimony in responding to the questions you are considering today as identified in my invitation.

1. I view the existing process for the licensing and regulation of commercial nuclear power plants has proven to be an inefficient and ineffective means for regulation of this industry. This process resulted in the following:

    (a) The facts have shown that licensing is not predictable nor are the regulations stable. Chart #1 shows the decline in the number of nuclear reactor units operating, under construction, or planned from 1973 to present.

As you can see, since the organization of the NRC was established in 1975, over 100 nuclear reactors that were planned or under construction have been cancelled, delayed indefinitely, or shut down in the U.S. compared with an increase of 118 units outside of the U.S.

As summarized September 1981 by the Nuclear Safety Oversight Committee in a report called "Governance of Nuclear Power" the prudent director of any American electric company would not vote in favor of a new commitment to a new nuclear power plant because the licensing and regulations of the industry are not predictable nor stable. The facts, as displayed in Chart #1, prove that something is wrong with U.S. nuclear power plant legislature.

Remember, reduction of construction also means reduction in employment and in the development of technology.

(b) The opportunity for public participation is so great in the existing licensing process that it now takes 12 to 16 years to operate a nuclear power plant. Compared to a fossil power plant which takes only about four years to satisfy the same objectives, as shown on Chart #2, the nuclear licensing and regulatory process is not an effective nor an efficient opportunity for public participation. Presently, approximately six years of hearings for construction permits and another six for operating licenses of nuclear power plants is excessive when compared to only one year for the hearing for fossil power plants which satisfies the same objectives.

(c) The increase, over time, in the quality of decisions rendered by the NRC has made the NRC an engineering company whose objective has been to increase the cost of nuclear power plants to the point that they are so uneconomically feasible that the NRC will no longer be needed. As shown on Chart #3, the Federal Energy Administration Project Independence Blueprint Report in November 1974 had found that average capital cost per kWe was $478 and had projected the cost to decrease to $438 by 1990 assuming business as usual; but instead the cost has increased to $5,600 per kWe. The consumer ultimately pays for the costs of the increase in the quality and quantity of the NRC decisions as proven by part of the increases in our electric bills. The quality of the economic decisions by the NRC are the poorest ever, within the framework of nuclear licensing and regulations.

(d) The existing framework for efficient resolution of health, safety, and environmental issues is not efficient. As discussed in the previous items, the time required and the effects of cost have proven to be very inefficient. All of the national, state and local agencies involved in the decisionmaking as shown on Chart #4, ensures that resolution of health, safety and environment will never be efficient unless legislative action creates change.

2. I believe that any change will result in improvements in the existing process if its goal is to keep nuclear power plants a feasible alternative to satisfy America's energy needs. The legislative recommendations submitted by the NRC and the Department of Energy should result in providing a more predictable and stable regulation in the future. In time, either one of the bills could improve the other items identified earlier. As early as 1974, the Atomic Energy Commission had addressed the actions required, which are still needed. "In order for... nuclear power growth...to be achieved, it is important to reduce the time required to bring a nuclear power plant on line." Those actions are noted in Chart #5. Either one of the bills could lead to appropriate actions as recognized 9 years ago. Therefore, please approve either bill now, any action is better than doing nothing. Either bill could stimulate nuclear power growth to make America the leader in technology and development, reduce unemployment in America, and reduce the cost of America's most important service, electricity.

3. I believe that the recommendations that have been proposed must be accomplished through legislative action and by Congress before administrative actions by the NRC or other organizations could be effective.

    (a) I support all legislative changes that will reduce unemployment and reduce the cost of services I will need in the future. I support both of the bills and any others that might speed the licensing process.

    In addition, I support any future legislature that would reform and restructure the electrical power industry that will provide for competition, coordination and construction. William W Berry, President of Virginia Electric and Power Company, on November 1, 1982, at the MIT Center for Energy Policy Research Symposium in Massachusetts, had made some proposals that could put the power generation facilities in the free enterprise system, and separate the transmission and distribution of electricity. "...in a deregulated industry where attractive profits are possible, we could easily see new entrants who believe they can capitalize on some competitive advantage." I interpret this to lead to lower cost to me as a consumer. I know that the competitive advantages of the cost of nuclear fuel could stimulate the growth of nuclear power plants, stimulate employment and reduce the percentage of my income that I pay for using electricity and buying goods that also use electricity.

    I also support all legislative changes that will improve the image of nuclear power generating facilities and that will show that the Congress supports the growth of nuclear power generating facilities.

(b) I support administrative changes that will reduce the bureaucracy of government and the regulations that are imposed on individual actions. Regulations for companies are actually regulations for the individuals who make the company. Our government is also a group of individuals, and as one of those individuals, I do not want to impose more regulations on myself. Administrative changes that stimulate free enterprises and reduce regulations will reduce unemployment and taxes.

I also support administrative changes that will improve the image of nuclear power generating facilities and that will show that the President and America's executive branch supports the growth of nuclear power generating facilities in the United States as the French administration is doing in its country as shown in the increase of power as shown in Chart #6. France is producing twice the percentage of electricity from nuclear power as the United States.

(c) As stated earlier, I support changing the current licensing process and I hope I have provided you with sufficient facts to prove that a need for change exists today, more so than in 1974. There is more urgency to make changes now, not later.

Finally, the rationale for considering and adopting legislative reforms first is needed, based upon facts that those areas that could be addressed administratively, have not succeeded in satisfying the needs of our great country. I believe that with the support of Congress, the administration could stimulate nuclear power plant growth, stimulate employment opportunities and help reduce the percentage of income all Americans pay for electricity and the goods that use electricity. I am convinced that either legislation will benefit all and I respectfully urge the Subcommittee to get these bills to the Senate floor and to push for passage of one of them through Congress.

In conclusion, as a previously unemployed technician in the nuclear power industry and an electric consumer, I believe that passage of any legislation that will speed the licensing process would benefit people like myself. Those technicians, who have worked in the nuclear power industry, have developed their skills to the highest level in the state of the art of engineering, but that knowledge is not being used when they are unemployed or when they take jobs in the chemical, manufacturing, or commercial industries. Please help stimulate the job market so America can use their knowledge to benefit all. Those electric consumers who have felt the increases in electric power usage, have developed their skills to a new level in the state of the art of economics, but cannot use the money being expensed for electricity for more beneficial uses. Please help stimulate the free enterprise system so America can use their available income for other competitive goods and services.

Thank you for giving me an opportunity to discuss my views. If you have any questions, please ask.

V

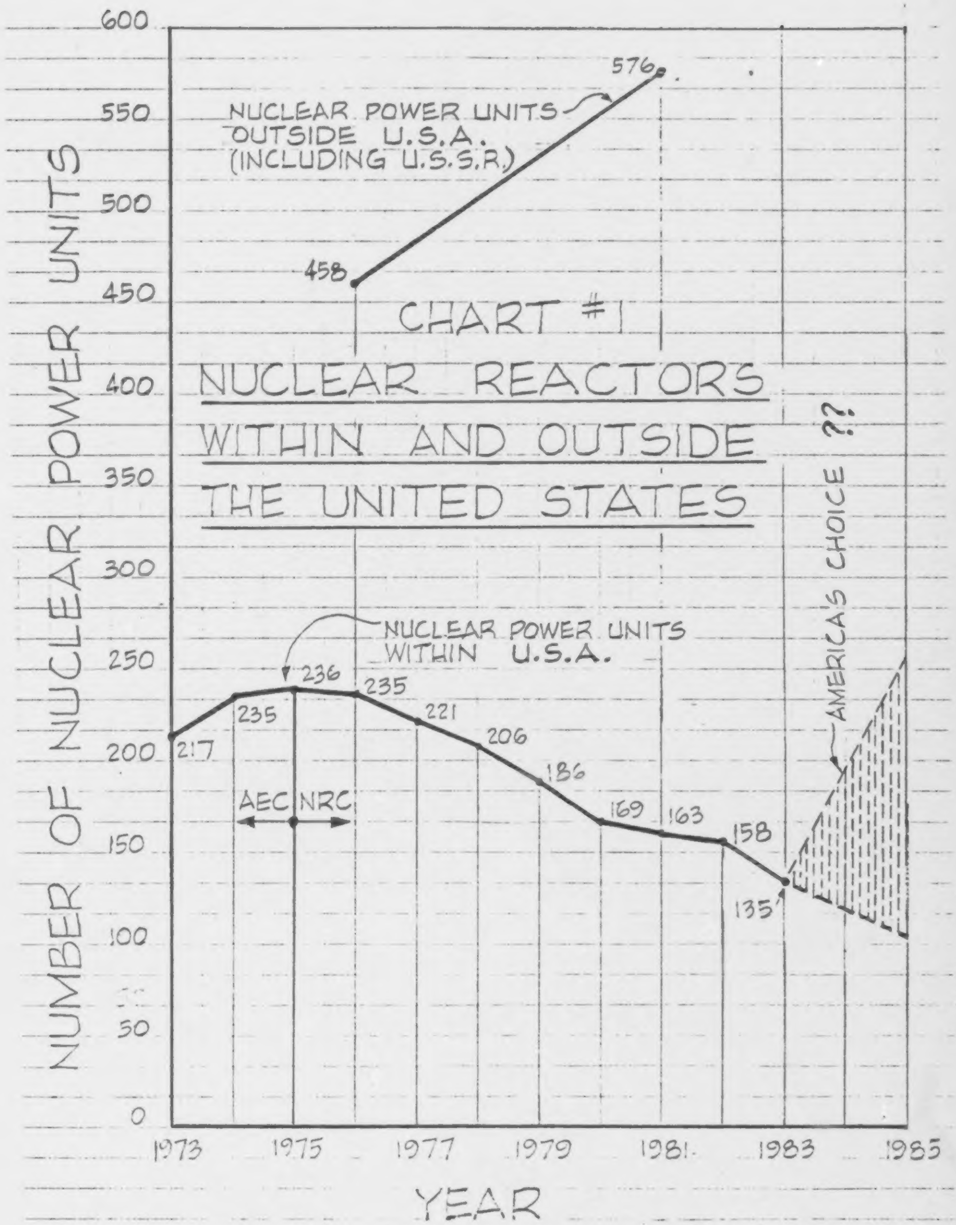


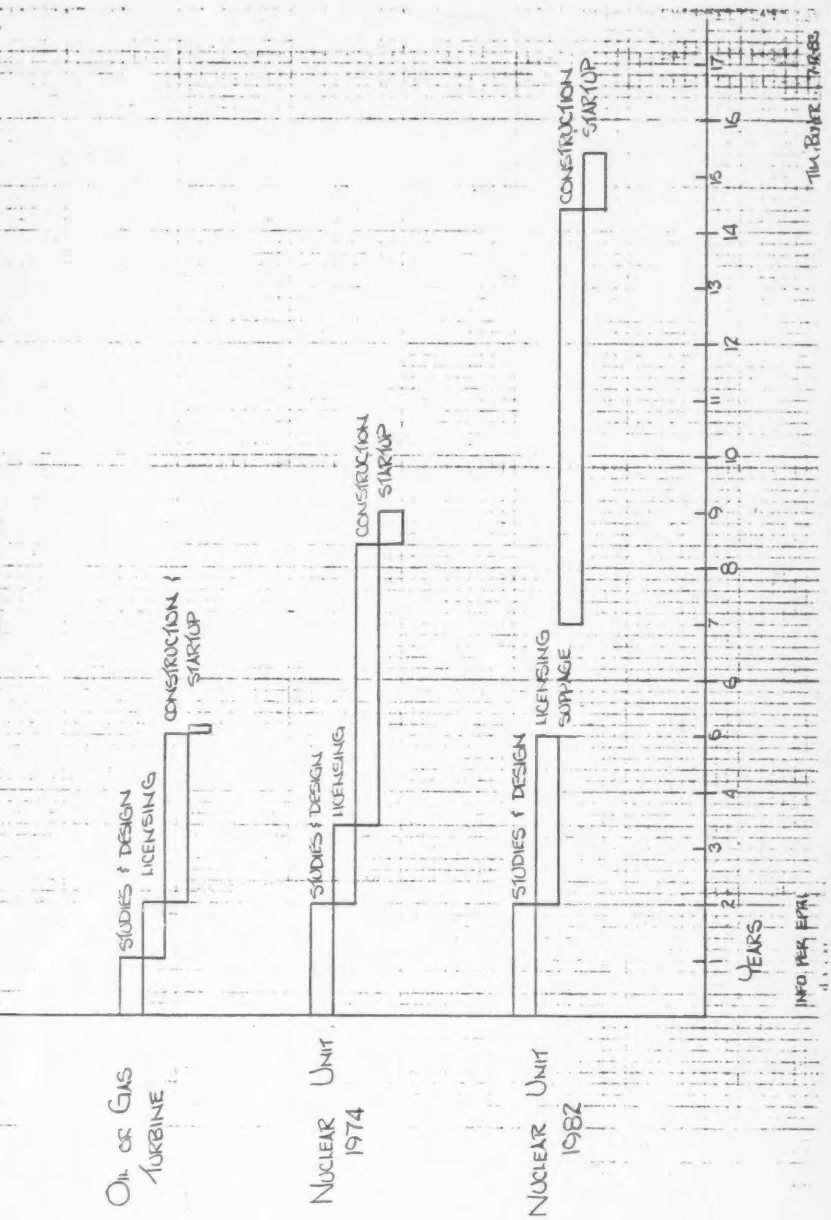
CHART #1

NUCLEAR REACTORS WITHIN AND OUTSIDE THE UNITED STATES

BASED UPON: DOE/EIA-0035(82/05) & NUCLEAR NEWS MAPS   R.E. ERB 7-12-83

TIME REQUIRED FOR POWER PLANT OPERATION

CHART #2



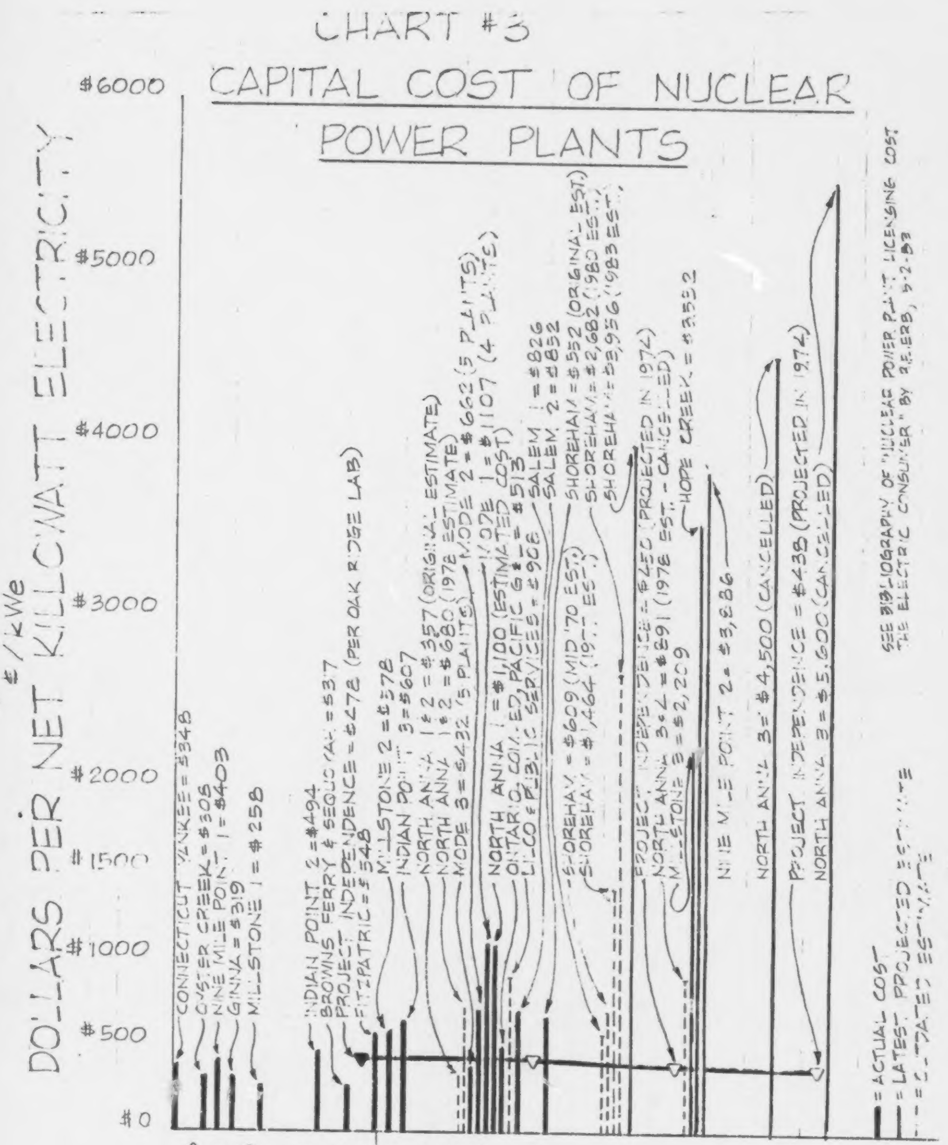


CHART #3

CAPITAL COST OF NUCLEAR POWER PLANTS

SEE BIBLIOGRAPHY OF "NUCLEAR POWER PLANT LICENSING COST THE ELECTRIC CONSUMER" BY R.E.ERB, 5-2-83

INFO FROM VARIOUS SOURCES

R.L.ERB 7/12/84

CHART #4

AGENCIES INVOLVED IN LICENSING NUCLEAR POWER PLANTS

LOCAL:

- City Council or Board of Alderman
- City Planning Commission
- City Air Quality Board
- City Health Department
- City Aviation Board
- City Department of Public Works
- City Zoning Board
- County Commissioners
- Township Trustees
- County Planning Commission
- County Air Quality Board
- County Water Quality Board
- County Health Department
- County Engineer
- Civil Defense Office
- Water District
- Port Authority
- Others as needed

STATE:

- Aeronautics Commission
- Archaeological Commission
- Historical Commission
- Attorney General
- Department of Agriculture
- Department of Conservation
- Department of Commerce
- Department of Environmental Protection
- Department of Human Resources
- Department of Mines and Minerals
- Department of Natural Resources
- Department of Parks and Recreation
- Department of Transportation
- Division of Forestry
- Division of Water Control
- Office of Local Government
- Office of Planning and Research
- Others as needed

FEDERAL:

- Nuclear Regulatory Commission
- Corps of Engineers - U.S. Army
- Council on Environmental Quality
- Department of Agriculture - Forest Service
- Department of Commerce -
  - National Oceanographic and Atmospheric Agency
  - Costal Zone Management Program
- Department of Defense
- Department of Interior
  - Bureau of Indian Affairs
  - Fish and Wildlife Service
  - National Park Service
- Department of Housing and Urban Development
- Department of Transportation
- Energy Resource Development Administration
- Environmental Protection Agency
- Federal Aviation Administration
- Federal Energy Administration
- Federal Power Commission
- Federal Energy Regulatory Commission
- Securities and Exchange Commission
- Others as needed

CHART #5

ACTIONS REQUIRED TO REDUCE THE TIME REQUIRED TO BRING A NUCLEAR POWER PLANT ON LINE
(PER "PROJECT INDEPENDENCE" - 1974)

1. Permit establishing the designated site concept which allows environmental and site suitability reviews and hearings to be conducted early and independent of the application for a construction permit. If site availability becomes a problem, establishing designated sites through federal pre-emption should be considered.

2. Promote the concept of standardization of nuclear power plants and their design efforts to reduce the time required to design, review and construct a power plant.

3. All permits relating to the site and the power plant should be made to conform to the same time table.

4. The environmental impact statement on a nuclear power plant should be pre-prepared under the designated site concept.

5. The reduction of retrofitting requirements during construction should receive senior engineering and management attention before the requirement is placed on the utility.

6. Operating permits should be granted when it is certified that the plant has been built and tested in accordance with the construction permit without a new public hearing.

7. Accept and certify state and locally approved sites without further review.

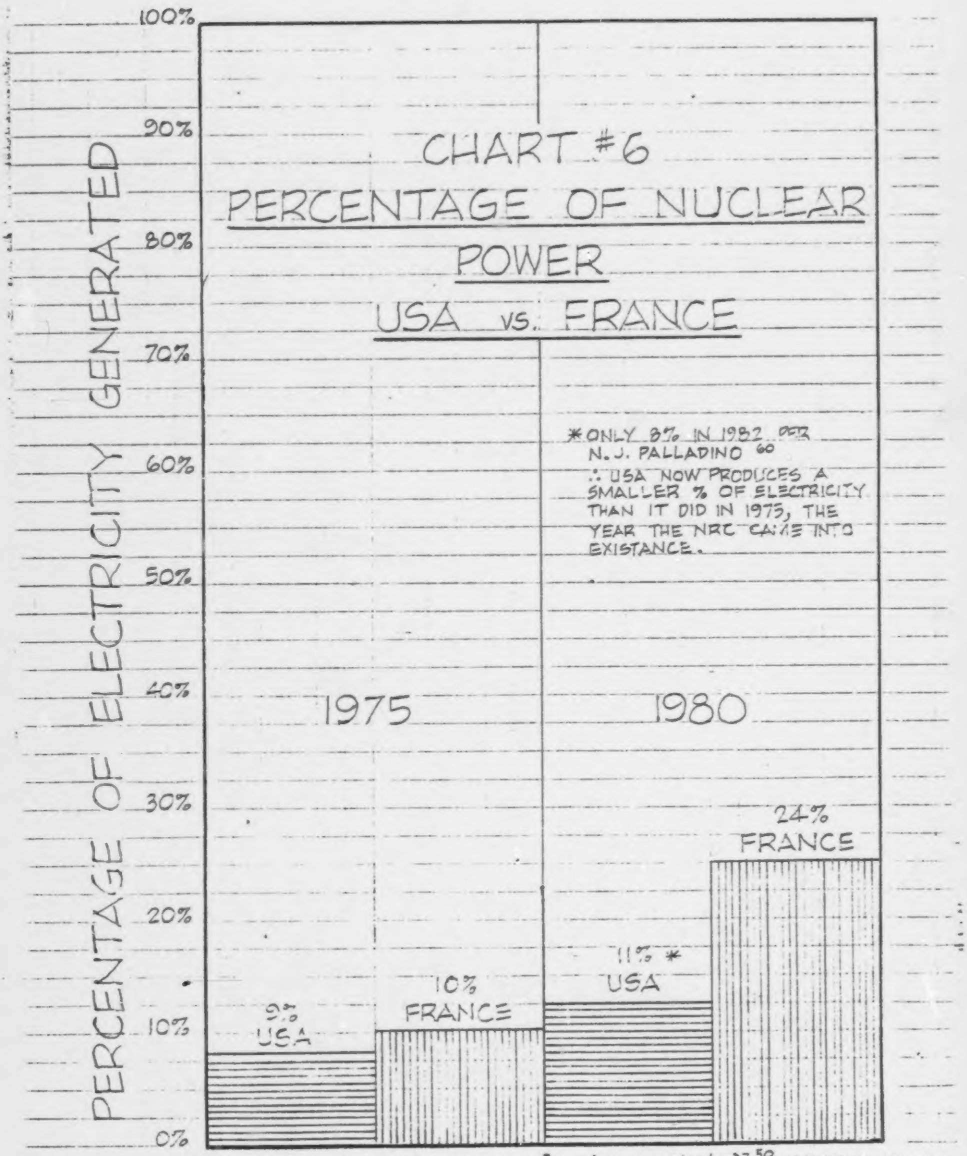


CHART #6
PERCENTAGE OF NUCLEAR POWER
USA vs. FRANCE

*ONLY 8% IN 1982 PER N.J. PALLADINO[60]
∴ USA NOW PRODUCES A SMALLER % OF ELECTRICITY THAN IT DID IN 1975, THE YEAR THE NRC CAME INTO EXISTANCE.

USA BASED UPON MONTHLY ENERGY REVIEW [DOE/EIA-0035(80/05)][50] R.E. EGE 7-13-83

NUCLEAR POWER PLANT LICENSING COSTS THE ELECTRIC CONSUMER

Robert E. Erb, Jr., C.E.T.
Staff Engineer

May 2, 1983

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NUCLEAR POWER PLANT LICENSING COSTS THE ELECTRIC CONSUMER

Robert E. Erb, Jr. 4-18-83

I Proposal to Amend the Energy Reorganization Act of 1974

In order to satisfy the public policies already stated in existing acts, including the Energy Reorganization Act of 1974 (PL 93-438), the following amendment is being proposed to give the President and Congress the information needed to take actions to minimize the financial burden on electric consumers and constituants of the United States in the future.

A Bill to amend the Energy Reorganization Act of 1974 (Public Law 93-438)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the Energy Reorganization Act of 1974 of October 11, 1974 (PL 93-438) is hereby amended as follows:

By adding in section 307 (c) the following:

"(7) insuring cost effective licensing requirements which may reduce the time required for construction permits to less than two years from time of request and still assure public safety and health."

This is an amendment which will only require the Nuclear Regulatory Commission to report to the President and Congress a clear description of activities and findings in this area along with other areas presently reporting. The paragraphs under this section is stated as follows:

> "(c) The Commission shall, as soon as practicable after the end of each fiscal year, make a report to the President for submission to the Congress on the activities of the Commission during the preceding fiscal year. Such report shall include a clear statement of the short-range and long-range goals, priorities, and plans of the Commission as they relate to the benefits, costs, and risks of commercial nuclear power. Such report shall include a clear statement

of the Commissions activities and findings in the following areas -

"(1) insuring the safe design of nuclear powerplants and other licensed facilities;

"(2) investigating abnormal occurrences and other defects in nuclear powerplants and other licensed facilities;

"(3) safeguarding special nuclear materials at all stages of the nuclear fuel cycle;

"(4) investigating suspected, attempted, or actual thefts of special nuclear materials in the licensed sector and developing contingency plans for dealing with such incidents;

"(5) insuring the safe, permanent disposal of high-level radioactive wastes through the licensing of nuclear activities and facilities;

"(6) protecting the public against the hazards of low-level radioactive emissions from licensed nuclear activities and facilities."[10]

The proposed amendment would be a seventh item which the Commission would be required to report.

This proposed amendment does not substantially change the present Act, but would help insure the intent of Congress is acted upon for potential future changes for the betterment of electric consumers and constituants of the United States. This amendment would be considered only a miscellaneous reporting funtion under Title III and would not necessarily affect the organizational structure of the NRC. The only affect would be to clarify the goals of the organization and require the NRC to include in its yearly report to the President and the Congress the NRC activities and findings in this area of cost effectiveness along with six other areas presently reporting.

II Introduction

This report will attempt to persuade as many people as possible to support changes to public policy which will reduce long term costs to electric consumers reflected by the long licensing process in nuclear power plants. Discussed has been a proposal to amend the Energy Reorganization Act of 1974 and supporting documentation in this report will attempt to clarify the need for change to stimulate nuclear power growth and the licensing process. Included hereafter is the background of Congressional policy, nuclear power plant basic system design, existing licensing process, the time required to complete power plants, the capital costs of nuclear power plants, the cost of fuels, the need for electricity for the public, and a conclusion to persuade readers of the need to approve the proposed amendment and to consider future actions to stimulate nuclear power plant construction. In addition, it is hoped that more people can understand more about nuclear power than they did before reading this report.

This author has taken, and will continue to take, actions to initiate changes in the public policy that deal with stimulating nuclear power growth in the United States to keep it ahead of other countries. Further discussion explains what actions have been taken and plans to motivate others to take action. The proposed amendment to the Energy Reorganization Act of 1974 has been submitted to Congressmen, lobbyists, Senators, and others in hopes that action will be taken to change the lengthy process of NRC licensing requirements.

The main body of this report is to provide perspective on the role of nuclear energy in meeting present and near future energy requirements. The necessary policy decisions must be based on many factors, other than technical evaluation, and shortening the licensing process could stimulate nuclear power plant growth, reduce unemployment, and reduce the percentage of expenses American consumers use for the use of electricity in the future.

Problems related to energy supply and utilization may be divided roughly into three interrelated categories - domestic, international, and technological. Domestic energy concerns are related largely to the availability of specific resources at reasonable and competitive costs. The international dimension of the energy picture relates largely to each country's desire for national security (military and economic), costs as they relate to unfavorable balance of payments, supply uncertainties, and foreign policy limitations. The technologies responsible for converting resources into usable are constrained by consideration of total costs, reliability, and environmental impact.

Of all the energy options available only uranium and coal are feasible fuels within the United States now. Conservation is decreasing energy demand. Natural gas, hydroelectric and petroleum are limited resources within the United States. Solar energy, thermal gradients, biomass, wind, geothermal, and fusion still need considerable research before they can be used in large scale. Just as there are problems with radiation when using uranium, radiation problems also exist when burning coal (though most of the public is unaware of this). Nuclear technology must be stimulated since it has the smallest environmental impact. More deaths occur in the coal cycle then in the nuclear cycle. Acid rain, mining, smog, and additional transportation problems with coal use hurts the environment more than uranium use. The technology for using uranium in nuclear power plants is available now, but needs policies which will stimulate its use instead of deteriorating the nuclear power industry as the facts in this report indicate.

The ability of the United States to meet future energy requirements, and thereby avert a severe energy crisis, depends on a well balanced energy policy. Such a policy should include all of the following energy alternatives:

1. continued dependence on natural gas and petroleum from both domestic production and imports, with plans to convert to coal where feasible;

2. voluntary and involuntary conservation;
3. increased reliance on coal and uranium for new electric power facilities; and
4. near and long-term development of the new technologies.

Despite potential problems, coal and uranium are needed energy resources, primarily because the technologies for their use are immediately available. Neither, by itself, appears to be capable of meeting the nation's differential energy requirements through the remainder of the twentieth century. Nuclear power plant construction has dramatically decreased over the past 8 years, and needs a "booster shot" to get America to be self sufficient in its energy supply. The "booster shot" must come from Congress, the President, and the judicial system with the support of its people, all of us Americans.

Please keep your mind open as you read this report, and if you reach the same conclusions that this author reached after seeing the facts, please write your congressman to take appropriate actions. All the underlines in this report are by the author only to "flag" the words he wishes to emphasize. The bibliography includes all referenced materials that substantiate the facts presented, and the numbers after phrases refer to the text identified in the bibliography.

III Background of Congressional Policy

The policies stated in Acts approved by Congress and the President dealing with nuclear power plants have emphasized the need to encourage, promote, and efficiently and effectively manage its use. The Atomic Energy Act of 1946 (PL 79-585), the Atomic Energy Act of 1954 (PL 83-703), the Energy Reorganization Act of 1974 (PL 93-438), the Department of Energy (PL 95-91), the proposed Nuclear Siting and Licensing Act of 1978 (H.R. 11704), the proposed Nuclear Power Plant Licensing Reform Act of 1983 (S. 893), and the proposed Nuclear Licensing and Regulatory Reform Act of 1983 (S. 894) all clearly state the policies that the administration of nuclear power plant licensing should be taking.[13]

The Atomic Energy Act of 1954 (PL 703), ammending the Atomic Energy Act of 1946, states the policy of the United States as the following:

> "a. the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare, subject at all times to the paramount objective of making the maximum contribution to the common defense and security; and
>
> "b. the development, use, and control of atomic energy shall be directed so as to promote world peace, improve the general welfare, increase the standard of living, and strengthen free competition in private enterprise."[19]

Furthermore this Act states as its purpose the following:

> "Sec. 3. Purpose-It is the purpose of this Act to effectuate the policies set forth above by providing for-
>
> "a. a program of conducting, assisting, and fostering research and development in order to encourage maximum scientific and industrial progress;
>
> "b. a program for the dissemenation of unclassified scientific and technical information and for the control, dissemination, and declassification of Restricted Data, subject to appropriate safeguards, as to

encourage scientific and industrial progress;

"d. a program to encourage widespread participation in the development and utilization of atomic energy for peaceful purpose to the maximum extent consistent with the common defense and security and with the health and safety of the public; and

"f. a program of administration which will be consistent with the foregoing policies and programs, of cooperation, which will enable the Congress to be currently informed so as to take further legislative action as my be appropriate."[19]

These policies were shown to be acted upon based upon the fact that nuclear power units operating, under construction or planned had grown to a maximum of 236 units by 1975 with the support of the Atomic Energy Commission.

Then the Energy Reorganization Act of 1974 (PL 93-438) disbanded the Atomic Energy Commission and created the Nuclear Regulatory Commission. Since the organization of the NRC to August 1982 only 158 units were operating, under construction or planned with 19 of them postponed indefinitely.[53] In addition, the two TMI units have been shut dwon indifinitely, Shippingport will be shut down in the near future, and North Anna Unit 3 has been cancelled in February 1983, leaving a total of only 135 units which may be operating in the future if no other discouragement occur. A reduction of 101 units has occurred since the organization of NRC; if there was no change in units planned in 1975, the United States would have 75% more units than is expected today. Is this what the policy of Congress intended?

The Energy Reorganization Act of 1974 was an Act "to reorganize and consolidate certain functions of the Federal Governement in a new Energy Research and Development Administration and in a new Nuclear Regulatory Commission in order to promote more efficient management of such functions."

Its declaration of purpose is as follows:

> "Sec. 2. (a) The Congress hereby declares that the general welfare and the common defense and security require effective action to develop, and increase the efficiency and reliability of use of, all energy source to meet the needs of present and future generations, to increase the productivity of the national economy and strengthen its position in regard to international trade, to make the Nation self-sufficient in energy, to advance the goals of restoring, protecting, and entrancing environmental quality, and to assure public health and safety."[10]

This Act transferred to the NRC all the licensing and related regulatory functions of the Atomic Energy Commission, the functions of the Atomic Safety and Licensing Board Panel and the Atomic Safety and Licensing Appeal Board.[13]

Other paragraphs within the Energy Reorganization Act of 1974 reinforces this policy stated. The Declaration of Purpose, Section 2 (a) required actions to "increase the efficency", and "to make the nation self-sufficient in energy". The Nuclear Energy Center Site Survey, Section 207 (4) under Title II-Nuclear Regulatory Commission requires the following:

> "The Commission is authorized to adopt policies which will encourage the location of nuclear power reactors..."[10]

Authorization of Appropriations, Section 305 (b) requires the following:

> "the Commission Shall reflect the need for effective licensing and other regulation of the nuclear industry..."[10]

This is some of the policy directed in the Energy Reorganization Act of 1974 which implies the intent of Congress is to promote nuclear power efficiently for the benefit of the United States and her citizens.

Recognizing the need for improving the efficiency of the governmental administration of energy related groups, the President and Congress approved

Public Law 95-91 on October 1, 1977 creating the Department of Energy. The Department of Energy assumed the powers and functions of the Federal Power Commission (FPC), the Federal Energy Administration (FEA) and the Energy Research and Development Administration (ERDA) (created under the Energy Reorganization Act of 1974), along with consolidating many other organizations, and created the Federal Energy Regulatory Commission (FERC), the Energy Information Administration (EIA) and other organizations. Congress expressed the need to efficiently manage when the Department of Energy was organized.[21]

Problems were recongnized in the NRC licensing requirements before 1978 when 30 units had been cancelled.[50] Congressman Udall had proposed H.R. 11704 on March 31, 1978 called the Nuclear Siting and Licensing Act of 1978 which would have amended the Atomic Energy Act of 1954 to establish a licensing process for the siting, construction, and operation of nuclear power reactors which met applicable safety and environmental criteria.[13] No actions were taken by Congress on this bill which would have authorized the NRC to grant joint construction permits and operating licenses, eliminating the need for two seperate hearings. The Atomic Industrial Forum, the nuclear industry's trade association, welcomed the bill, but environmentalists and public interest groups said the bill gave short shrift to environmental concerns, unfairly restricted public access to the licensing, ignored the real reasons behind nuclear power's development problems, failed to remedy existing problems associated with nuclear plants, and proposed ineffective reform.[21]

On March 23, 1983, two bills had been referred to the Subcommittee on Nuclear Regulations of the Senate Committee on Environment and Public Works. Senator Simpson introduced S. 893, the Nuclear Power Plant Licensing Act of 1983, and S.894, the Nuclear Licensing and Regualtory Reform Act of 1983.

The proposed Nuclear Power Plant Licensing Reform Act of 1983 (S. 893) was transmitted to Congress on February 21, 1983 by the NRC which is meant to provide an accurate, efficient, and more effective licensing process for the design, siting, construction, and operation of nuclear power plants. The NRC has recognized that timeliness of licensing is a problem as it now exists. The purpose of this bill is stated as follows:

> "Sec. 2. (a) The Congress, recognizing that a clear and coordinated energy policy consistent with public health and safety must include an effective and efficient licensing process for siting, construction, and operation of nuclear power plants which meet applicable criteria, finds and declares that:
>
> "(1) Interstate commerce is substantially affected by the siting, construction, and operation of nuclear power plants;
>
> "(2) opportunity for public participation in siting and licensing of nuclear power plants should be assured;
>
> "(3) it is efficient and in the public interest for the Nuclear Regulatory Commission, for purposes required by the National Environmental Policy Act of 1969 or other provisions of Federal law applicable to its licensing, to rely upon determinations respecting the need for, the alternative sources of, new electric generating facilities made by competent Federal, State, or regional authorities;
>
> "(4) the licensing and construction of nuclear power plants would be facilitated and the public health and safety enhanced by the use of pre-approved nuclear power plant designs, particularly standardized designs;
>
> "(5) there is a need to encourage the development and use of

> standardized nuclear power plant designs because such designs can *benefit* public health and safety by concentrating the resources of designers, engineers, and vendors on particular approaches, by stimulating standardized programs of construction practice and quality assurance, by *improving* the training of personnel and by fostering more *effective* maintenance and improving operations, and because the use of such designs can permit a more *effective and efficient licensing* and inspection process;
>
> "(8) all phases of the licensing process should be handled in a *timely* manner...
>
> "(10) consistent with the Commission's paramount responsibility to protect the public health and safety, and *recognizing that elimination of all risk is an unattainable goal for any energy source*, it is appropriate and in the public interest for the Commission *to consider the economic consequences* of its regulatory practices including, but not limited to, *the cost of safety* requirements;..."

The proposed Nuclear Licensing and Regulatory Reform Act of 1983 was transmitted to Congress by the Department of Energy on March 18, 1983 which is intended to improve the nuclear licensing and regulatory process. In addition to the NRC recognizing a problem exists, the Department of Energy has also initiated actions to solve the delema of licensing nuclear power plants. The purpose of the bill is stated as follows:

> "Sec. 2. (a) The Congress, recognizing that an effective and efficient licensing and regulatory process for siting, construction, and operation of nuclear power plants meeting safety and environmental criteria is in the national interest, finds and declares that-

"(1) Interstate commerce is substantially effected by the siting, construction, and operation of nuclear power plants;

"(2) meaningful public participation in siting and licensing of nuclear power plants should be assured;

"(3) determinations respecting the need for the power to be generated by nuclear power plants should be made by State or Local authorities, where possible, and not by the Federal Government;

"(4) siting and construction of nuclear power plants would be facilitated and the public health and safety enhanced by the use of preapproved nuclear power reactor designs which reduce the need for individuals reactor licensing reviews;

"(5) siting of nuclear power plants would be facilitated by early review and approval of the suitability of sites;

"(6) siting, construction, and operation of nuclear power plants would be facilitated by use of a single-step licensing process; and

"(7) the Nuclear Regulatory Commission should continue to exercise its independent statutory responsibilities to protect the public health and safety and the common defense and security, taking into account that absolute safety is an unattainable goal for any energy source, that the cost of additional safety requirements should be given consideration, and that adequate protection of the health and safety of the public, in accordance with high standards established by the Commision, is the paramount consideration.

"(b) The purposes of this Act are-

"(1) to improve the effectiveness and efficiency of the nuclear power plant licensing and regulatory process, consistent with

> paramount responsibility of the Nuclear Regulatory Commission to protect the health and safety of the public;..."

Each of the Acts and proposed bills discussed herein consistently support the intent of Congress from 1954 to the present, is to develop and promote nuclear power plant use in the free enterprise system using the most cost efficient and effective management of the licensing process with the safety and health of the public. These policies have not been satisfied since the organization of the Nuclear Regulatory Commission in 1975. Actions by Congress will have to be taken to help the electric consumer and the constituents within the United States to be assured that their, and our, electric bills do not use such a large part of their, and our, income, and so that these resources can be used for improving the standard of living for all within this wonderful Nation of ours.

The information within this report attempts to address the facts that support the need for change.

IV NUCLEAR POWER PLANT BASIC SYSTEM DESIGN

The fundamental difference of a nuclear power and fossil power generating plant is only the fuel used to heat the water into steam so it can turn the turbine and generator shaft which creates the electricity. The principles of both types of plants are identical and use many of the same components except fossil powered plants use boiler furnaces and nuclear power plants use reactor vessels to generate the heat. Heat generated by controlled fission reaction was first commercialized in the 1960's and development time was accellerated by a linking together of government, industry, and scientific community. The dominant type of reactor is the light water reactor (LWR) in the United States. The issues of safety, safeguards, and storage arising from the nuclear fuel cycle and from the nature of nuclear reactors themselves constitute the basis for public concern about the future of nuclear energy.[23] These issues are not fully addressed in this report, but concentrate on the licensing process and the basic system design.

The basic system of LWR include boiling water reactors (BWR) and pressurized water reactors (PWR). The generation of electric power from nuclear energy is based upon a controlled "chain reaction" in which neutrons enter the nucleus of fissile material, causing the nucleus to split which creates heat. The fissile uranium isotype U-235 slightly enriched to 2 to 4% (.7% in natural form) are converted to oxide form, cast into small pellets about ½ inch in diameter and one inch long are the fuel used in place of coal, oil, or gas. These pellets are inserted into a thick walled pressure vessel, represent the core of the reactor and are immersed in circulating water. When the control rods are withdrawn from the core it becomes "critical", or a chain reaction is initiated and results in the heating of the fuel rods. The heat in turn is transmitted to the water circulating through the pressure vessel and is drawn off to drive, directly or indirectly, a conventional steam turbine. When the water in the reactor vessel is directly converted to steam, the system is called a BWR. When the water is under more pressure it does not convert to steam directly, but it passes through a steam generator, a large heat exchanger, which converts another "loop" of water into steam to drive the turbine, this system is called a PWR. The BWR and PWR are the dominate type of reactors in the United States.

Most of the difficulties currently influencing the development of nuclear power in the United States arises from the hazards associated with the presence of these fission products in the core. A nuclear reactor could conceivably suffer a loss of coolant water in which the decay heat within the reactor arising from the fission products could cause the core to melt, similar to that which occured at Three Mile Island (TMI). It must be noted though that no "melt down" could occur as shown in the movie China Syndrome, nor can a nuclear plant explode like a bomb since the uranium is not sufficiently enriched.[44] In fact even during the worst nuclear "disaster" in history, TMI, the average person living around the plant was exposed to only 1.5 mR of radiation which is even less radiation that a person receives from living in a brick house . for a year.[41] The annual or 18 month fuel change-over made in the course of normal operations to replace a part of the spent fuel in the core gives rise to the two other major policy issues relative to nuclear power: the complex of difficulties relating to the safeguarding of special nuclear materials, and the problems associated with disposal of high-level waste.[29] These policy questions must be resolved by Congress. The spent fuel being discharged from nuclear reactors is now simply being stored, awaiting the development of a reprocessing industry and permanent disposal facilities. Reprocessing plants and breeder reactors (including liquid metal fast breeder reactors (LMFBR) will become a significant element in the second generation fuels destined for LWR [29] which could provide an unlimited supply of energy fuels. Congress has initiated policy for future disposal of waste in 1983 with the support of President Regan. Therefore, policies are being made to solve all of the problems associated with nuclear power plants which might stimulate a future growth of nuclear energy.

Nuclear energy can be generated in many other ways other than LWR's. Some of the technologies that are being tested or in conceptual stages include spectral-shift-control reactors (SSCR), light water breeder reactor (LWBR), heavy water reactor (CANDU or HWR), high temperature gas cooled reactor (HTGR), molten salt breeder reactor (MSR or MSBR), liquid metal fast breeder reactor (LMFBR), gas cooled fast breeder reactor (GCFBR), and various fusion reactors which enlarge atoms instead of splitting atoms. The Clinch River Breeder Reactor being designed and constructed for commercial operation is a LMFBR. The earliest any of these designs could be put into operation is 1990 or much later depending on the actions of Congress and the administration.[32] Many scientists feel that the HTGR is potentially the next best alternative to LWR because of the low releases of radioactivity as proven by Fort St. Vrain in Platteville, Colorado and is presently being developed in Germany. Breeder and fusion reactors could supply almost unlimited amount of energy. These are some of the choices the United States could develop with the support of Congress.

This has been a very brief review of nuclear power plant basic systems only to familiarize the readers of alternative designs and to recognize the fundamental simplicity of nuclear power plants. In essence they only differ from fossil power plants in how the heat is generated.

Up to this point, this report has made a proposal to amend the Energy Reorganization Act of 1974, provided an introduction, discussed Congressional policy and nuclear power plant basic system design. Additional facts will be presented to discuss the existing licensing requirements, the time required to complete power plants, the capital costs of nuclear power plants, the cost of fuels, the need for electricity, and finally a conclusion to persuade all readers of the need to approve the proposed amendment and to consider future actions to stimulate nuclear power plant construction.

CONVENTIONAL POWER PLANT -FOSSIL

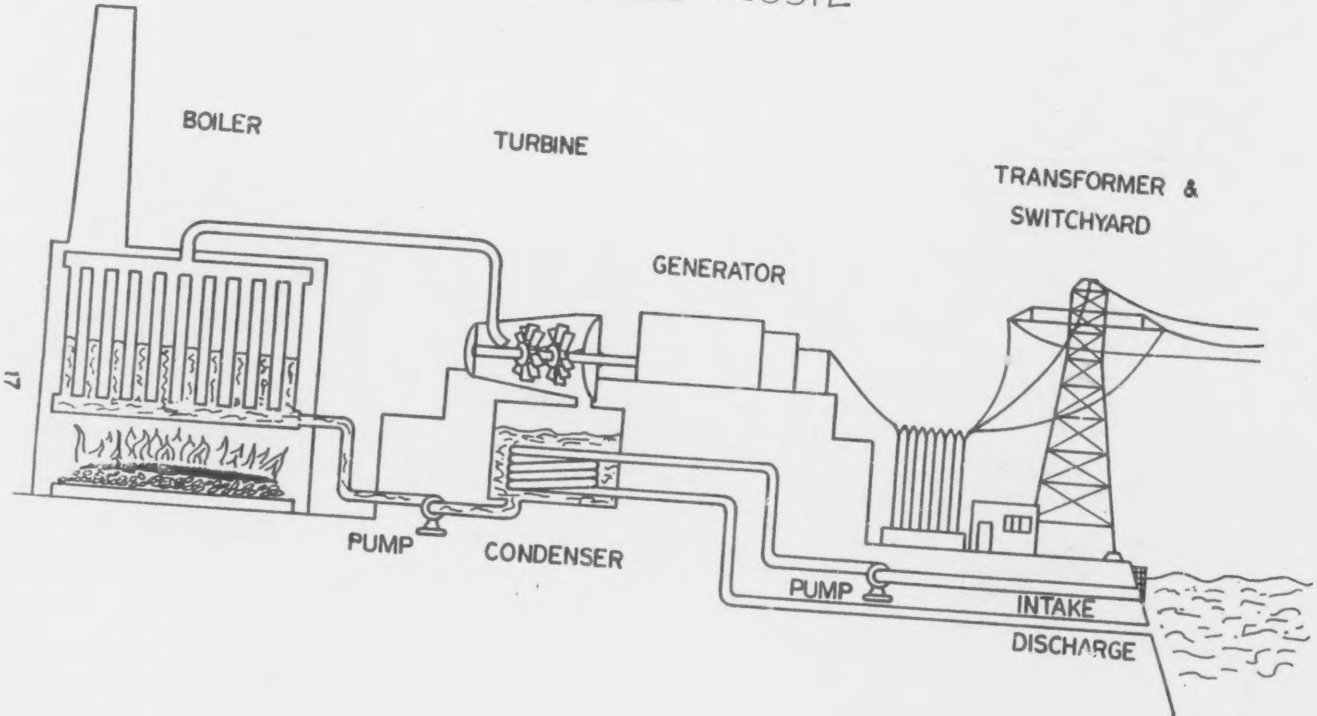

BOILER
TURBINE
GENERATOR
TRANSFORMER &
SWITCHYARD
PUMP
CONDENSER
PUMP
INTAKE
DISCHARGE

FIGURE 3

NUCLEAR POWER PLANT - BWR

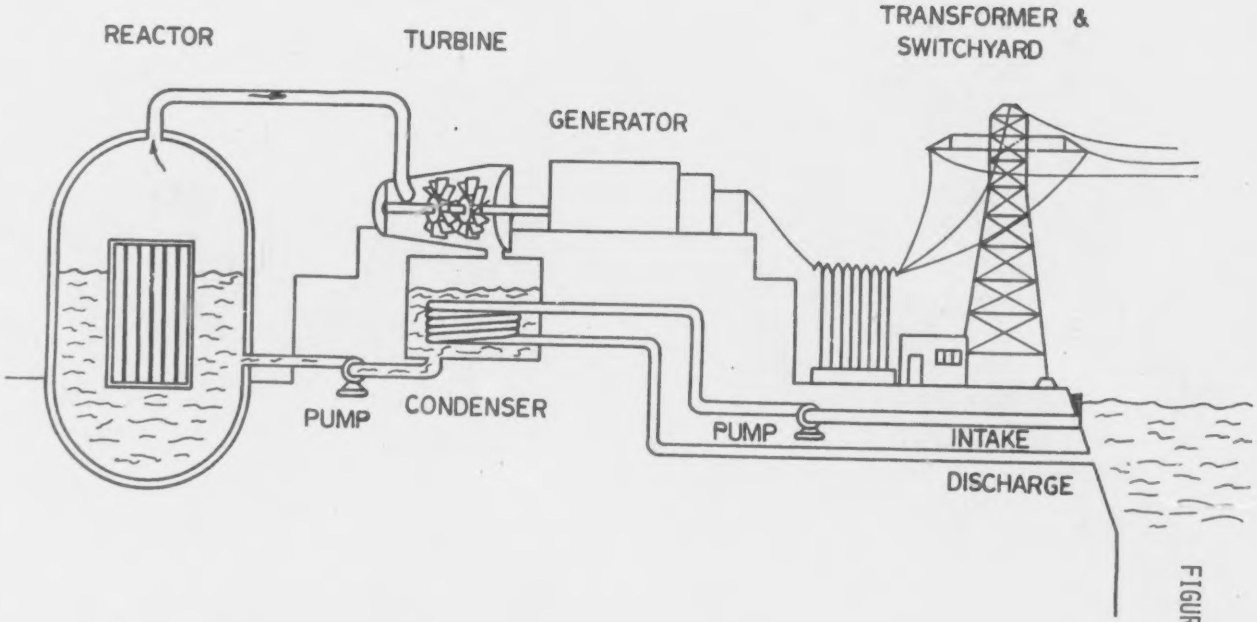
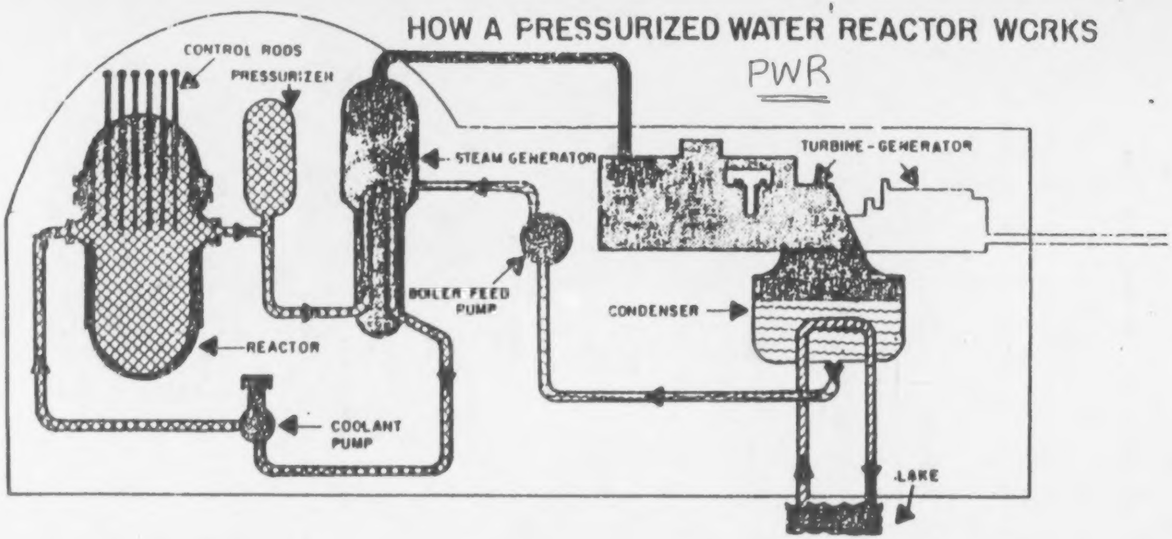

REACTOR
TURBINE
GENERATOR
TRANSFORMER & SWITCHYARD
PUMP
CONDENSER
PUMP
INTAKE
DISCHARGE

FIGURE 4

HOW A PRESSURIZED WATER REACTOR WORKS

PWR


CONTROL RODS
PRESSURIZER
STEAM GENERATOR
TURBINE-GENERATOR
BOILER FEED PUMP
CONDENSER
REACTOR
COOLANT PUMP
LAKE

THIS SCHEMATIC DRAWING OF THE NORTH ANNA STATION SHOWS ALL THE PRINCIPAL COMPONENTS USED IN GENERATING ELECTRICITY FROM NUCLEAR ENERGY.

HOUSED IN EACH OF TWO DOME-SHAPED CONTAINMENT BUILDINGS ARE IDENTICAL REACTORS, PRESSURIZERS, COOLANT PUMPS AND STEAM GENERATORS.

IN THE TURBINE BUILDING, BEHIND THE DOMES, ARE THE CONDENSERS AND THE TURBINE-GENERATORS. THIS IS THE CONVENTIONAL PORTION OF THE STATION AND IS SIMILAR TO COAL-FIRED PLANTS THROUGHOUT THE NATION.

CONNECTING THE TWO CONTAINMENT BUILDINGS AND THE TURBINE BUILDING IS A SERIES OF TUBING WHICH SERVES TWO PURPOSES. IT CARRIES THE STEAM CREATED IN THE STEAM GENERATOR TO THE TURBINES TO TURN THE BLADES WHICH TURN THE GENERATORS AND PRODUCE ELECTRICITY. IT THEN BRINGS THE CONDENSATE (WATER CONDENSED FROM THE STEAM) BACK INTO THE CONTAINMENT BUILDINGS.

▩	REACTOR COOLANT WATER
▨	CONDENSER COOLING WATER
▤	CONDENSATE
■	STEAM

V Licensing Requirements for Nuclear Power Plants

The licensing requirements for nuclear power plants is a very time consuming exercise. But before we discuss the licensing requirements, the following was reported by Victor Stello, a director for the NRC:

> "Historically, the nuclear enterprise is unique in U.S. industry on several accounts. First the technology was created, owned and monopolized by the Federal Government in the national security arena. Realizing the potential benefits to the economy as a whole, the Federal Government in 1954 announced its intent to encourage widespread private development and use of nuclear technology. This led to the second unique aspect of the industry. The Congress recognized from the beginning that this technology was inherently dangerous and required carefully monitored development. Unlike other sectors of private enterprise where the Government awaits problems to develop before stepping in, the Congress mandated that the nuclear industry would be regulated from the outset.
>
> Partly in recognition of the scarcity of technical manpower and partly in recognition of the still evolutionary nature of the technology, Congress placed both the promotional and regulatory functions in the same agency..."[57]

The promotional responsibilities have been abandoned since the creation of the NRC, but regulations and licensing requirements have imposed a heavy burden on electric consumers and the public.

The licensing process summarized R. W. Deutsch best explains the time consuming process as it now exists:

> "The licensing process requires two separate licenses, one to construct the plant and the other to operate it. It has been taking about six years

to complete all of the requirements to obtain the construction permit. Another five years is required to complete construction and obtain an operating license. Finally, about one year of testing required before the plant is placed into commercial operation. All during construction and even after operation the plant is under inspection by the NRC to make sure the plant is in compliance with federal regulations. In addition, the utility must report any abnormal occurrences or face severe penalties including loss of license."[40]

The Energy Power Research Institute has indicated that construction along with approval of the operating license has been taking seven and one-half years.[49] Recognize that the licensing process is a "two-step" process.

The "two-step" process means repeating essentially the same process for an operating license as was required for a construction permit. The following steps must be repeated twice:[40]

1. The utility submits a formal application describing the design and location of the proposed plants and safeguards to be provided. This includes a Preliminary Safety Analysis Report (PSAR) for the construction permit and a Final Safety Analysis Report (FSAR) for the operating license which is submitted to the NRC Public Document Room, the NRC Advisory Committee on Reactor Safeguards, state and local officials, and the Federal Register. These reports will result in NRC press releases, notice of application, related information and correspondence.
2. The NRC's Office of Nuclear Reactor Regulations (NRR) make copies of the application available to the public. NRR techncial experts study the application, review it with the applicant and prepares an analysis.
3. The NRR analysis is submitted to the NRC's Advisory Committee on Reactor Safeguards (ACRS), a committee of independent experts. ACRS studies

the application in detail and holds conferences with the applicant and the NRR staff. The ACRS findings are reported to the NRC and made public through reports to NRC commissioners and press releases.

4. A public hearing is held usually near the proposed site, by NRC appointed Atomic Safety and Licensing Board. Private citizens, State and local officials and community groups may attend and give testimony. A public hearing may not be required for an operating license, but is always held for a construction permit.
5. After reviewing the testimony and the NRR and ACRS findings, the Atomic Safety and Licensing Board decides for or against granting a construction permit.
6. The Board's decision is subject to review by the five-member Nuclear Regulatory Commission.
7. A construction permit is then granted or denied and public notice is given. If granted, construction may begin, subject to inspection by the NRC Office of Inspection and Enforcement.
8. As construction progresses, additional information is developed and the utility applies for an operating license. The same careful analysis is made by the NRC in deciding whether or not to issue the operating permit. NRC's Office of Inspection and Enforcement reviews plant operation and records. The operating permit application starts at (1) above and follows the same "two-step" process.

From the initial submittal for a construction permit to putting a plant on line takes between 12 to 16 years. It is generally agreed that by streamlining the licensing process, the present schedule can be reduced by several years without compromising the safety of the plant. Since the cost of a nuclear plant now includes about 18% for interest and 27% for escalation of materials and labor costs over the time of construction, expediting plant construction and operation by eliminating redundant reports and hearings can save utility customers hundreds of millions of dollars.[40]

The Kemeny Commission report was highly critical of the NRC. They noted that NRC regulations are too voluminous and too complex, requiring immense efforts by the utilities and its suppliers to assure compliance. They recommended that the NRC be abolished and replaced with an executive agency, headed by a single administrator, with the responsibility of ensuring public safety as its primary mission. These changes should result in changes that will improve the regulatory process.[40]

The legislative response to licensing demands has been a complicated, interwoven, sometimes conflicting system of laws at the various levels of government. The net results of this legislation has been the development of regulatory agencies that have been given broad authority to interpret their enabling statutes which may conflict with NRC statutes. While these agencies may be guided by years of court decisions and precident, the authority to promulgate rules and regulations has resulted in a second set of complex requirements which the electric utility industry must meet in order to gain approval for construction of new energy facilities.[34]

The National Environmental Policy Act places the responsibility for the preparation of environmental assessments with federal agencies. These requirements affect all power plants, but there are numerous other agencies which are involved. Throughout the entire gamut of preconstruction planning and approval, and continuing through the construction and operating plases, a utility must develop contacts with agencies at all levels of government. In fact, each agency having an interest in power projects within its jurisdication and prossessing some approval or regulatory authority must be approved.[34]

Some of the local agencies existing in municiplalites, counties, and townships or through regional organizations are many. Initial approval must normally be obtained from these authroities before proceeding to state or federal agencies. Local approval is normally vested in the following organizations: City Council or Board of Alderman, City Planning Commission, City Air Quality Board, City Health Department, City Aviation Board, City Department of Public Works, City Zoning Board, County Commissioners, Township Trustees, County Planning Commission, County Air Quality Board, County Water Quality Board, County Health Department, County Engineer, Civil Defense Office, Water District, and Port Authority among others.[34]

Although local agencies are most directly affected by the siting process, state regulatory agencies often have more control and direct legislative mandate over utility operations. Some typical state agencies include the following: Aeronautics Commission, Archaeological Commission, Historical Commission, Attorney General, Department of Agriculture, Department of Conservation, Department of Commerce, Department of Environmental Protection, Department of Finance and Administration, Department of Fish and Wildlife, Department of Human Resources, Department of Mines and Minerals, Department of Natural Resources, Department of Parks and Recreation, Department of Transportation, Division of Air Pollution, Division of Forestry, Division of Water Control, Office of Local Government, Office of Planning and Research, among others. These agencies originated with the Clean Air Act of 1965, Water Quality Act of 1967, Energy Concervation and Resource Act of 1976, Power Plant Siting Acts, and many other legislative Acts.

There are many other federal agencies other than the NRC that have the potential for involvement. Some these agencies include the following: Corps of Engineers-U.S. Army, Council on Environmental Quality, Department of Agriculture-Forest Service, Department of Commerce-National Oceanographic and

Atmospheric Agency and the Costal Zone Management Program, Department of Defense, Department of Interior-Bureau of Indian Affairs, Fish and Wildlife Service, and National Park Service, Department of Housing and Urban Development, Department of Transportation, Energy Resource Development Administration (ERDA also created by the Energy Reorganization Act of 1974 with the NRC), Environmental Protection Agency (EPA), Federal Aviation Administration (FAA), Federal Energy Administration (FEA), Federal Power Commission (EPC), Federal Energy Regulatory Commission (FERC), Securities and Exchange Commission (SEC), among others. These agencies were created by Executive Orders, Reorganization Plan Number 3 of 1970, the Clear Air Act Amendments of 1970, the Water Pollution Control Act Amendments of 1972, the Federal Power Act of 1970, the Rivers and Harbors Act of 1899, Coastal Zone Management Act of 1972, and many others. While the agencies listed are not all inclusive, they do present the majority of the federal agencies involved in plant site approval.[34]

Because the number of federal agencies involved in plant siting has grown over the last few years and because increasingly laonger delays are being experienced as a results of the involvement by these agencies, the Office of State Programs of NRC is attempting to develop new approaches for power plant siting in order to improve both the effectiveness and the efficiency of the process. Delays in the licensing process can be attributed to the following:[34]

1. lack of standardization,
2. lack of utility responsiveness to staff or reviewer requests for data submissions,
3. continually changing requirements as to the format for data submissions,
4. understaffed review agencies that contribute to long turn-around times,
5. inordinate amounts of paperwork that must be precessed
6. the complexity of state and federal agencies involved in the siting process, and
7. the recent trend toward interwoven activity.[34]

A recent staff report from the Office of State Programs of the NPC has been developed, based upon experiences of that agency, that presents suggestions for decreasing delays and improving the licensing and regulatory effectiveness in joint federal/state siting action.[34] Such evaluations are helpful in creating a public awareness of the deficencies that must be addressed. The proposed amendment to the Energy Reorganization Act of 1974 should stimulate more public awareness so that constructive actions might be taken by Congress to save electric a considerable part of their income for more effective use.

VI Time Required for Power Plant Operation

The licensing requirements and the regulations imposed during construction have increased nuclear power plant construction from under four years (as France and other countries are presently doing) to up to 16 years today. In fact, oil or gas turbine electric generating units are being operated only after four years from initial studies with the licensing process only taking about a year after design is complete compared with three to seven years in the licensing for construction permits for nuclear power plants. As stated in the Nuclear Power Plant Basic System Designs of this report, fossil and nuclear power plants are basically the same types of facilities, but nuclear plants are taking up to eight to 12 years longer.[49] Is this really necessary?

As early as 1974, a report issued for President Nixon for Project Independence by a task force of the Federal Energy Administration under direction of the Atomic Energy Commission had recognized the problems in the licensing of nuclear power plants. As stated:

> "With the dramatic increase in licensing time to approximately three years for applications submitted to the Atomic Energy Commission (AEC) in 1970 and 1971, it was apparent that action had to be taken to reduce the licensing time and to eliminate the excessive backlog of licensing casework that had developed. Actions taken by the AEC from 1971 to present time (1974) have reduced the licensing time to an estimated 18 months for applications submitted today which virtually eliminated the excess backlog..."[24]

Project Independence indentified the Presidential goal of reducing the time to bring nuclear power plants on-line from the 8 to 10 years taken in 1974 to period of 6 years or less. The task force believed that a 6 year cycle was achievable and in order for nuclear power growth to be achieved, it was important to reduce the time required to bring a nuclear power plant on-line. It was concluded that licensing could prove to be a significant limiting factor and cost decreases seemed possible through the implimentation of a shorter licensing process. Data obtained from analysis by Oak Ridge National Laboratory on plant capital costs showed that a 7% change would result for each year that the design cosntruction period was shortened or lengthened and 10% for a second unit at the same site.[24] These conclusions were reached in 1974 and they still exist today, except that the cost of capital is considerably more in 1983 than it was in 1974.

Before the AEC was made into the NRC, its objective was to reduce to 16 months the time from application for a construction permit to its issuance, but that objective has never been reached and the time actually increased after 1974. All of the AEC management initiatived and administrative changes focused primarily on shortening this time, but the NRC has proved it has not. In 1974, the task force reporting for the AEC stated that legislation would be required to obtain any further significant reduction in this time, but recent legislation has actually increased the time required adding to electric consumers costs. The implementation of nuclear power for electric utility use is influenced by regulation and control.[24]

The Rogovin study, the NRC Special Inquiry, concluded that the NRC "is not focused, organized, or managed to meet today's needs".[25] Those include the kind of focus that the proposed amendment would establish.

The General Accounting Office evaluation of the NRC's performance in its first five years (January 1980) had condluded that "the Commission regulatory performance can be characterized best as slow, indecisive, and cautious--- in a word, complacent...... The Commissioners have not established measurable regulatory goals, objectives, and systems for measuring performance...... and meeting goals and objectives." Again, the proposed amendment would establish a goal for the NRC and requires a report to justify the slowness in the licensing process or help it meet a goal.

The Nuclear Safety Oversight Committee in September 1981, said that in none of the studies they had reviewed could they find the question or answer of what is the impact of the NRC net--on the cost of electricity produced by nuclear power". Part of that cost is induced by the delays in licensing that this report is attempting to identify. Reducing the licensing time as described in the proposed amendment will help to answer the question raised.

As regards costs and the timeliness of the licensing process, others have concerns. Studies by the Congressional Budget Office and the NRC conclude that the NRC process for regulating construction permits and operating licenses cause delays of up to three years (in what was then a ten year process), which at current interest rates substantially affects the cost competitiveness of nuclear power. Investors argue that the frequent changes in NRC regulations create uncertainties that are reflected in interest premiums paid by utilities, which ultimately increase costs to the electric consumers. France builds reactors of Westinghouse design and of comparable safety in less than half the time required in the United States, which at current interest rates means a savings of nearly a third the total cost. In other words, for example; if North Anna Unit 3 which was projected to cost 5.1 billion dollars if completed in 1991 was completed in 1987, about 2 billion dollars could be saved; this unit was cancelled because of the high cost. A tremendous amount of money could be saved by the electric consumer if the licensing process was reduced as proposed in the amendment this report deals with.

Recognize that as early as 1975, the President recognized the problems in licensing delays and announced to Congress actions that needed to be taken to meet mid-term goals (1975-1985):

> "To accelerate the growth of nuclear power which supplies only one percent of our energy needs, the President is proposing...
> (a) Expedited licensing and siting (legislative)-A Nuclear Facilities Licensing Act ot assure more rapid siting and licensing of nuclear plants."[47]

VII Capital Costs of Nuclear Power Plants

Due to the time required to license and construct nuclear power plants, the capital costs have increased from an average price of $317 per kilowatt (KW)[26] for the TVA Browns Ferry and Sequoyah units operating between 1974 to 1982[52] to a projected high of $5,600 per KW for the cancelled North Anna Unit 3 projected completion in 1991.[22] The capital costs related to the construction of nuclear power plants, including the high interest rates with heavy competition for capital in financial markers, have prevented board of directors of American electric utility companies from approving nuclear power plant construction, even though fuel costs use as much as 80% less than some fossil fuel today. In fact, no nulcear plants have been ordered in the United States for over five years.

The Oak Ridge Laboratory had estimated the average capital costs for nuclear power plants for Project Independence in 1974 to be $478 per KW for a first unit and $431 KW for a second unit which a design and construction period of 8 years. It had projected that the costs for the first unit would decrease to $450 per KW by 1985 and to $438 per KW by 1990 since the technology was reasonably stable. But in fact this downward trend was a fantasy since the costs have increased to over 12 times this amount. In other words, the United States could have built 12 units in 1974 compared to only one unit starting construction in 1983 for the same amount of money.

This author has worked on 8 nuclear sites or 15 units and has personally seen tremendous increases. The Zion Nuclear Unit 1 & 2 were completed in 1974 for a cost of approzimately $800 million for both units totaling 2080 megawatts (2,080,000KW) or for about $378 per KW. The original Shoreham BWR unit of 580 MW was projected to cost $271 million or $552 per KW, but later bought 820 MW reactor and was to cost $500 million for the one unit or $609 per KW. Later in 1977 it was projected to cost $1.2 billion or $1,464 per KW. Due to increased NRC regulations the projection was increased to $2.2 billion in 1980 or $2,682 per KW. But recently it was estimated to cost $3.2 billion or almost $4,000 per KW to satisfy all of TMI requirements and may not be completed for years yet, though originally planned to be operating in March of 1983. The North Anna Site originally had planned 4 units totaling 3,569 MW to cost one billion including the cost of a 13,000 acre lake or $357 per KW. Units 1 & 2 were projected to cost 680 per KW in 1978[26] but the county records now show that approximately $2 billion in asset value for only 2 units in 1983 (both operating after 1980), or over $1,100 per KW. Unit 4 was cancelled in 1981 after Unit 3 was projected to cost $2 billion; but recently re-estimated for TMI modification, Unit 3 was projected to cost $5.1 billion for 1991 completion or $5,600 per KW and the board of directors decided to cancel this unit in 1983. These are just a few of the examples of cost escallation this author has personally realized in his experiences.

From a report done in 1978,[26] it is interesting to note the cost per KW in capital costs had increased since 1974.

> "These are to give some reference standards as compared to the anticipated completion cost of (North Anna) Units 1 & 2 of $680 per KW. It is expected that utilities such as LILCO (Long Island Lighting Company) and Public Service Electric and Gas, due for commercial operation in mid-1979, will come in at an average price of $908 per KW. Utilities currently in a control mode such as Ontario Hydro, Commonwealth Edison and Pacific Gas and Electric show an average of $513 per KW on units in the same time period. The only information available for any utility in the total construction management mode is that for TVA's

> Brown Ferry and Sequoia units. The average price of $317 per KW cannot be attributed solely to the efficiencies of force labor management but also includes the lowest cost of their capital... One the right hand is the current projected cost of North Anna Units 3 & 4 under the present management mode, an average of $891 per KW. It is my personal view that these numbers are low, based upon anticipated new regulatory requirements and increasing escallation and inflation...Certainly it's lower than the $1,100 per KW projected by Theodore Barry for the average cost of North Anna vintage units, although, in fact, North Anna may approach that number when all returns are in...Based upon a sample if five plants of Mode I utilities this sample projects an average cost of $1,107 per KW. Six plants from utilites currently utilizing Mode II type of operations in some form project an average cost of $662 per KW. In four plants available in Mode III, from Duke and TVA show an average of $452 per KW..."[26]

Today, in 1983, these costs have escallated even higher and as stated earlier to up to $4,000 to $5,600 per KW. These kind of costs make it impossible for utilities to find sufficient capital to finance this type of construction and not get a return on that investment for 12 to 16 years.

If the decision to order a new nuclear power plant were made today, the plant could begin producing power in 1995 to 1999. What could happen in the interim? Could some President or Congress, Governor or State Legislature, NRC or Public Utilities Commission be anti-nuclear? In fact, this period is likely to include 3 or 4 Presidents, 4 or 5 Governors, and 6 to 8 Congresses, State Legislatures, NRC'S and PUC'S. The prudent director cannot ignore these risks in his investment decision.

Obviously there is some risk that the coal-fired plant director would decide for might be subjected to crippling delay. The possiblity of a new wave of environmentalism that highlights the helth effects of burning coal beyond the company's ability to abate air pollution by modifying the plant or its operation cannot be excluded. In fact, the best current scientific studies indicate that the mortalities and morbidities from coal are likely to exceed those from nuclear power generation. Butthese risks appear of a markedly lower order than those posed by the new nuclear power plant.[25]

Commercial nuclear power in the United States has reached a dead end. The absence of orders for new nuclear plants for the past five years, and the cancellation or indefinite postponement of over 100 earlier orders, may not be just a prolonged hiatus in the stop-and-go history of nuclear power in the United States. It has signaled the end of new orders for nuclear power in the United States under current system for the decades ahead and perhaps beyond.

The United States growth in nuclear power is dead end because of the capital costs, but nuclear power plant are increasing in all other parts of the world. In comparing the reduction of 236 units, operating, under construction or planned in 1974, to a reduction to 135 in 1983, the growth pattern of nuclear power outside the U.S. between 1976 to 1981 increased from 458 to 576 units. The world outside of the U.S. whose standards of living are much lower than the U.S. have continued to find ways to increase its nuclear production led by the brisk activity in France. France produced 10% of its electricity by nuclear power plants in 1975 and was producing 24% in 1980. The U.S. only pordues 8 % of its electrical energy from nuclear pwoer plants.[60] The rest of the world recognizes the cost effectiveness of fuel costs.

VIII Fuel Costs of Power Plants

The cost of nuclear fuels results in yearly savings of 30 to 80% compared to fossil fuels which is passed on to the electric consumers and constituents of the United States. One must recognize the vast difference in the quantity of fuel needed in nuclear and coal fired power plants. A coal fired plant needs a whole train load of coal everyday compared to only a young persons handful of nuclear fuel which is used daily in present nuclear power plants.* For example, the investment in coal mines to produce 17.8 million tons of coal annually in 1971 would be about $250 million, and about 3,500 men would be needed. One the other hand the uranium mine and mill to produce the same amount of electricity would cost about $20 million in 1971 and require about 100 men.[27]

The cost of fuel has been the predominate factor in deciding the type of power plant in the past. Production in coal mines dropped 20 to 30% in 1969 which caused the price of coal to skyrocket. Oil prices skyrocketed because of the Arab Oil Embargo forced oil prices up to the point in the late 70's that oil was 10 times its cost in 1973. This motivated industry to make conversions back to coal to keep expenses lower. Nuclear plants only amounted to 2% total power in 1971 but was expected to increase to 36% by 1985 and 85% by the year 2000.[27] The production and search of fuel was switching from fossil fuels to uranium up until 1975 because the fuel costs were so low but the capital costs and regulations imposed upon the industry were so great that coal has become the fuel of the future even though its cost is much greater than nuclear fuel.

Nuclear fuel is the only fuel which can be capitalized while it is being used in the core of the reactor. Capitalization is an accounting function

* Daily nuclear fuel consumption is about the size of a lemon

which distributes the cost over a period of years, such as the plant itself or a car is handled in the accounting books. The reason for capitalization is that the nuclear fuel stays in the core for a period of three to five years, though a third of the oldest part of the core is replaced every year or two; this process in called refueling. All other fossil fuels are expensed and are consummed as soon as they are used. The advantage of capitalization is that the stock increases in book value, and the stockholder can receive higher return on his investment, and the electric consumer saves with a smaller rate base.

In 1981, nuclear fuel costs per kilowatt-hour were about one-tenth of oil cost and less than one-third the cost of coal. Even in 1973 nuclear fuel was slightly more than half the cost of coal and oil and more nuclear plants were ordered during the smaller difference in fuel cost then today, even though the difference more easily justifies a switch to nuclear fuel. The costs of fuels per kilowatt-hour in 1973 were .28¢ for nuclear, .60¢ for oil, and .50¢ for coal. The costs of fuels per kilowatt-hour in 1981 were .65¢ for nuclear, 5.73¢ for oil, and 2.20¢ for coal,[42] and in 1982 were .61¢ for nuclear, 5.6¢ for oil, and 2.0¢ for coal.[59] These costs of fuels would motivate sound businessmen to switch to nuclear fuels if the capital costs of construction were not such a heavy burden due to the regulations and the delays in licensing processes.

The impact of the cost of fossil fuels could justify the building of a nuclear plant every year if they could still be built for the same amount they were built in 1974 or earlier. In an example to show this, Virginia Electric and Power Company spent $817.3 million for all of its fuel including purchased and interchanged power in 1982.[22] This is more than what the Zion Units 1 & 2 had cost in 1974.

Another example to emphasize the impact of fuel costs would show that Virginia Electric and Power had generated 41% of its electricity[22] for its consumers using nuclear fuel in its four units, but only spent 7% of its total fuel costs.[42] In other words, Vepco spent almost $600 million for fossil fuels, but only a little more than $42 million, and the nuclear fuel has the advantage of capitalization (or amortization) over many years. This example might help us realize the impact of the cost advantages of using nuclear fuel. All of these cost savings could be savings to the electric consumer and constituents of the United States if Congress helps stimulate free enterprise in the utility business. The proposed amendment might help to give more confidence to motivate utilities to decide for using nuclear fuel.

IX The need for Electricity

The need for electricity continues to increase, though at a slower pace than earlier projected because of conservation methods being employed. Electricity is only a portion of the total energy needed in the United States, but probably one of the most important energy source. Electricity represents approximately 30% of all the energy used in the household sector and about 18% of the disposable income in those households earning $5,000.[48] Therefore, electricity costs affect the lower income constituents of the United States more than the higher income, since those earning over $35,000 spend less than 5% on the average in 1980.[48]

Electric generation was projected to increase by 33% between 1976 to 1985 and almost 80% between 1976 to 1990 when analyzed in 1980.[48] When 2032 billion KWh were consumed in 1976, 9% of this was nuclear, in 1985 3101 billion was projected with 19% nuclear (though this percent is now projected to be less than 15%), and 3616 billion was projected in 1990 with 26% of this generated from nuclear power plants (though this will be less).[48] The Department of Energy has projected that electricity generation will require 3 times more output in 2020 than what is being used now and in order to meet this need, nuclear plower plant electric generation will have to be more than *all* of the fossil and nuclear plants combined in 1990. All of the plants operating and actively under construction will only provide enough electricty that will be needed by the year 1988.[48] How will this electrical need be satisfied in future years?

In 1975, when electrical gneration was projected to be higher than it is projected now, the facts gathered by the Subcommittee on Energy Research, Development, and Demonstration reflected a growing concern for all of the energy needs in the Uinted States. A few excerpts of *Energy Facts II* dated

August 1975, must be recognized to understand the same problems which must be dealt with in 1983 and beyond.

> "Petroleum imports remain at high levels even at present high prices. Domestic oil production continues to decline as older fields are depleted and new fields are years from production...Total U.S. petroleum consumption is increasing, although at slower rates due to higher prices. Coal production is at about the same level as in the 1930's. Nuclear energy accounts for only 1% of total energy supply and new plants are being delayed, postponed, or cancelled. Overall energy consumption is begining to increase again. Heavy outflow of U.S. dollars (and in effect jobs) to pay for growing oil imports-about $24 billion in 1974 compared to $2.7 billion in 1970."[49]

Further, the U.S. energy outlook was evaluated:

> "Mid-term (1975-1985): In the next ten years, there is greater flexibility. A number of actions can be taken to increase domestic supply, convert from foreign oil to domestic coal and nuclear energy, and reduce demand-if the nation takes tough actions. Vulnerability to an embargo can be eliminated."

Many projections have been made dealing with electrical consumption in the future, but continually changing directions of Congresses and Presidents have affected the accuracy of projections, so projecting needs to be left in the hands of fortune tellers. Though most utilities seem to have facts that show that 3% increases every year will surely occur. Compounded, the U.S. will undoubtedly need twice the electrical gneration that it has presently before the year 2000. The proposed amendment may help to stimulate actions to satisfy this projected need.

Conservation, coal, and uranium are the keys of the energy future of this nation, at least until the end of this century, based upon the electric power needs projected.[33] Between 1973 to 1978, nationwide, our annual peak load has grown by some 70 million kilowatts, (or 70,000 megawatts). If this energy was satisfied by all nuclear units of 1000MW each, then 70 nuclear units could be built in 5 years. In 1978, it was estimated that there would be a need of about 130,000 MW to the present, an equivalent of 130 nuclear units.[33] Project Independence had projected that nuclear gneration could increase from 47,000 MW in 1975 to 207,000 MW[24] by 1983, an equivalent of 160 nuclear units could have been added, but only 76 plants are licensed.[58] Even if all of the nuclear plants operating, under construction, and indefinitely delayed were operating August 1982, 147,767 MWe[52] would be produced, far less than Project Independence expected assuming "business as usual".[24] "Business as usual" from 1974, since the creation of the NRC, has not occurred but has been decelerated. Project Independence expected 500,000 MWe to be produced by nuclear plants by the year 2000, or an increase of an equivalent of over 400 nuclear units in order to satisfy the electric consumers. Based upon the facts presented earlier in this report this expectation is impossible to meet, but the elctricity must come from some place.

There are many ways in which we can understand where this electrical need will exist. Households are always increasing their electrical consumption through new appliances, electric heat pumps, all electric homes, etc. New households come into existance every day and new homes are continually built to satisfy todays need which add to electrical needs. More people are being born everyday increasing the population of the U.S. and the electrical consumption; most estimates project about 50 million more people in the nation by the turn of the century which will account for an increase of 15 million households.[33] More electrical appliances are used in work places, such as computers and robotics. The existing 10% unemployed will need to be employed in the near future and will require electricity to do their jobs. Another 10 to 12 million jobs need to be created over the next 10 years which will take more energy to run offices, factories, and shops where these people will work.[33] As gas and oil become less available, in many instances electric energy will substitute for them. Increasing amounts of energy also will be required for cleaning the environment. Decision makers who sitmulate electrical generation have an overriding responsibility to provide all the electric energy the people of this country really need, at prices they can afford, consistant with maintaining a clean environment. Maintaining a clean environment will consume as much as 10 to 15% of the output which reduces the capacity already available to serve present needs.[33]

The energy problem now faced by the United States was recongnized over 12 years ago. Do we need to wait for a crisis to occur before we take actions to solve the problems we already know exist? Do we have to have blackouts and brown outs again? Past crisis include the oil embargo of 1973, the natural gas shortage of 1976-1977, and the gasoline lines of the summer of 1979.[32] Nuclear power plants are our only real hope of satisfying our future electrical demand, fossil fuel shortages, and the many environmental problems. Satisfying our needs with nuclear power plants are our only alternative to economic stagnation. After all, the average amount of electricity cost only 2¢ out of every $1.00 of sales; but if there is no electricity there will be no production and the loss of the electricity will eliminate the $1.00 of sales.[27]

X Conclusion

The objective of this report is to persuade readers of the need to approve proposed amendment and to consider future actions to stimulate nuclear power plant construction. Included is a proposal to amend the Energy Reorganization Act of 1974, introduction, the background of Congressional policy, nuclear power plant basic system design, existing lincesing process, the time required to complete power plants, the capital costs of nuclear power plants, the cost of fuels, and the need for electricity.

Harvey Broods, Benjamin Peirce, Professor of Technology and Pulbic Policy at Harvard University, said in 1979:

> "As fluid fuels are phased out of use for electricitygeneration, coal and nuclear power are the only economic alternatives for large-scale application in the remainder of this century. A balanced mix of coal and nuclear-generated electricity is preferable to the predominance of either...
>
> In terms of public risks from routine operation of electric power plants (including fuel production and delivery), coal-fired generation presents the highest overall level of risk, with oil-fired and nuclear generation considerably safer..."[32]

The public has consistantly recognized nuclear power as essential if people are to have enough energy to meet basic needs, live in reasonable comfort, and look forward to improving their own lives and those of their children and the underprivileged. In 1974, the National Science Foundation sponsored a national survey and found that 65% of the respondents reported that they had or would have a favorable reaction to having an electric plant fueled by nuclear energy in their area and 78% agreed with the statement: "Nuclear power should be used to produce electricity."[24] A survey by Louis Harris and Associates in 1980 indicated that 51% of the public favored new construction, and 68% favored the construction of power plants now in operation.[45] This author has found in his experiences, that the majority of those who resist nuclear power plant construction lack sufficient knowledge about the benefits and need for nuclear power. He has changed many people's attitudes in as little as 3 to 20 minutes by taking some of the "mystery" out of what nuclear plants are. The word "nuclear" tends to make many people think of a bomb instead of physics to generate heat. Since the early 1970's many reports have stressed the need to educate the public about nuclear power, but not sufficient training has occurred yet. The vast majority of the people of the United States could easily support nuclear power growth if they had more knowledge.

Another strong advantage of constructing nuclear power plants not yet discussed is the creation of jobs. An example of the impact of building a nuclear plant is the North Anna Nuclear Powr Station located in Louisa County, Virginia. This plant provided jobs for thousands upon thousands of workers and presently employs over 650 direct site employees, hundreds of contractors on site and hundreds of other contractor employees located all over the United States of America. Louisa County was one of the poorest counties in the state prior to the construction of this site. Today it is one of the richest counties in the state. This plant had created a 13,000 acre lake which will satisfy the recreational needs of millions in the future. The overall standard of living of all in the county has increased since this plant began. Similar occurance are occurring all over the world. Nuclear power plants create jobs which are desperately needed in order to reduce the unemployment in this country.

What is the objective of National policy? The Atomic Energy Act of 1954 (as amended) declares it "to be the policy of the United States that...the development, use, and control of atomic energy shall be directed so as to make the maximum contribution to the general welfare...", and it seeks "to encourage widespread participation in the development and utilization of atomic energy for peaceful purposes to the maximum extent consistent with the common defense and security and with the health and safety of the public."[25] The language has been subject to interpretation, but this author along with many others see the minimum objective of nuclear governance consistent with the national policy is to maintain the option of nuclear power as one of the mix of sources for meeting America's energy needs. The national policy needs to be changed to be more positive toweard the use of nuclear energy in the future based upon the facts presented in this report.

Nuclear power is extraordinary capital intensive, more so than coal. The capital cost of a 1200 MWe nuclear plant ordered today, for completion in 12 to 16 years, would be in the range of 4 to 6 billion dollars. It is unlikely that many utilities now could have access to this amount of capital at serviceable interest rates. By reducing the licensing time the construction time could be reduced which would in turn reduce the capital cost. The impact of the NRC on the cost of electricity produced by nuclear power has been devastating as discussed. All of the studies this author has reviewed malign the NRC for lack of leadership, competence, imagination, energy, and goal direction. The proposed amendment might help establish a little direction. And since 1974, the AEC had stated that reduction in the licensing time was possible and it still is, as many other countries are licensing their sites quickly.

This author would like to introduce another design method which will reduce capital costs associated with building nuclear power plants for use by utilities and their contractors. Every nuclear plant that this author has worked in looks like "garbage cans" compared with chemical plants. Chemical plants tend to use structural "racks" to support pipes, conduit, electrical trays, ducts and other conveyors which make the sites look systematic. These racks are left with open spaces for future installations. If this same strategy is used in nuclear plants, less analysis would be required and they could easily provide for future additions required by the NRC. This concept sounds easier than it could be applied since it means the coordination of all who are working on the plant with consistant management direction. The development of this method cannot be developed in this report, but the concept might provide significant savings in overall capital costs to make nuclear power plants more attractive.

The Washington Post said in an editorial in October of 1982, "... A well-built and well-run nuclear reactor is among the safest and cleanest of all devices for generating electricity..." In addition Nunzio J. Palladino, Chairman of NRC. stated the following:

> "There are several reasons - financial, for example - why American utilities are not buying new reactors at this time, but the fear that nuclear power plants pose significant risks to the public is not one of them.
>
> "....keeping these risks to a level low enough that society can enjoy the benefits of nuclear generated electricity without undue concern for public safety is why you pay my salary and the salary of the other 3,300 employees in the Nuclear Regulatory Commission...."[60]

Nuclear power is safe and the United States Armed Forces has proved it's capabilities in over 100 nuclear units that are being operated for the defense of our Nation. Our defense system has more nuclear reactors than the utility industry, yet we hear nothing unsafe about these reactors.

As discussed by John W. Landis in 1980 the following still applies:

"It is therefore the duty of each one of us in this room, and of the hundreds of thousands like us throughout the country, to take the lead in whatever ways we can, beneficially, to resolve this crisis. Politicians - and others - like to make believe they're in charge, particularly if they can claim credit for any and all achievements. But it's easy to tell they're not the leaders in this war. A leader, by definition, musters the talents and resources required to accomplish a certain task and then guides his organization in the proper channels to make as much progress toward his goal as possible. That means that he spends most of his time finding ways to surmount obstacles in his path - that he is most evident when the going is rough. Take a careful look at the people who are directing th clean-up at Three Mile Island or at the site of any other major energy-related accident, who are working night and day to solve (not complain about) the nation's frustrating conservation, environmental, mining, fuel-transportation, fuel-processing, energy-storage, energy-transmission and energy-use problems, and you will find that they are mostly engineers - engineers learning by doing instead of procrastinating by talking.

"Yes, President Carter is right. The energy crisis is the moral equivalent of war. But since it is, let's treat it that way. Let's fight - and fight to win, drawing on all the wisdom and ingenuity at our command, particularly the wisdom and ingenuity of the engineering profession." 61

In conclusion, this report is intended to persuade all who reads it the need to amend the Energy Reorganization Act of 1974 with the proposed amendment to require the NRC to report on the feasibility of reducing the licensing process for construction permits to less than two years so that the electric consumer and constituants of the United States do not have to continue bearing the costs of these delays. In addition, this author hopes that everyone will get involved in taking future actions to stimulate nuclear power plant construction for the benefit of America. Remember nuclear power plant licensing ultimately costs the electric consumers, all of us. Write letters to your Congressmen and Senators to let them know that you want licensing of nuclear power plants speeded up and that you support nuclear power plant development. You are the answer to solving America's energy needs.

Robert E. Erb, Jr. March 13, 1983

BIBLIOGRAPHY

REFERENCE DOCUMENTS

Related to ammending the Energy Reorganization Act of 1974

1. Congressional Procedures and the Policy Process, by Walter J. Oleszek, Congressional Quarterly Press, Washington D. C., 1978.
2. Interest Groups, Lobbying and Policymaking, by Norman J. Ornstein and Shirley Elder, Congressional Quarterly Press, Washington, D. C., 1979.
3. The Washington Lobby, Congressional Quarterly Press, Washington, D. C. , 1979.
4. "Our Americal Government: What is It? How Does it Function? 150 Questions and Answers" U. S. Government Printing Office, Washington, D. C., May 1980 (1981 Edition)
5. "The Constitution of the United States of America, as amended," U. S. Government Printing Office, Washington, D. C., 1976.
6. "How Our Laws are Made", by Dr. Charles J. Zinn, U. S. Government Printing Office, Washington, D. C., 1976.
7. Environmental Impact Analysis - An Examination of Three Methologies, prepared for Office of Water Resources Research, Wisconsin University, Madison, 1973. Chapter C.
8. Shepard's Acts and Cases by Popular Name, Federal and State, Shepard's Citations Inc., Colorado Springs, 1979.
9. U. S. CODE, 1976 ed. U. S. Government Printing Office, Washington, D. C. 1981.
10. Statutes at Large of the United States of America, Vol. 88 Part 1, U. S. Government Printing Office, Washington, D. C., 88 STAT.1233, and 88 STAT. 919
11. Congressional Record Vol. 119, U. S. Government Printing Office, Washington, D. C., 1973.
12. Congressional Record Vol. 120, Part 21 U. S. Government Printing Office, Washington, D. C., 1974.
13. Congressional Information Service Index to Publications of the U.S. Congress, C15, Washington, D. C., 1982
14. Almanac of American Politics, by Michael Barone, Barone & Co., Washington, D. C. , 1981
15. Encyclopedia of Associations, 17th ed., Gale, Cetroit, 1982
16. Congress and the Nation, Vol. IV, 1973 - 1976 Q C Inc., Virginia

17. Digest of Public General Bills and Resolutions, Congressional Research Service, U. S. Government Printing Office, Library of Congress, 1974 Final Issue Part 1.

18. Guide to Congress, 3d ed, Congressional Quarterly Inc., Washington D. C., 1982.

19. Gallup Poll - Public Opinion, 1981, 1980, 1979, by George H. Gallup.

20. "Americans for Nuclear Energy" by Douglas O. Lee, P. O. Box 28371, Washington, D. C., 6-12-1981.

21. Energy Policy, 2nd ed., Congressional Quarterly Inc., Washington, D. C., 1981.

22. "Virginia Electric and Power Company 1982 Annual Report", Richmond, Virginia.

23. CRG Newsletter, Vol. 4, Number 2, by Committee for Responsible Government, Virginia Electric and Power Company, Richmond, Virginia, October 1982.

24. Project Independence, by Federal Energy Administration under direction of Atomic Energy Commission, U. S. Government Printing Office, Washington, D. C., November 1974.

25. Governance of Nuclear Power, by Graham Allison, Albert Carnesale, Paul Zigman, Francis X. DeRosa submitted to the President's Nuclear Safety oversight Committee, U. S. Government Printing Office, Washington, D. C. September 1981.

26. Vepco PICS Implementation at North Anna Project, Slide presentation by Jack Harrison, 1979

27. "Power Crisis", by Robert E. Erb, Jr., November 15, 1971.

28. Amercana Year Book 1971, Encyclopedia Americana.

29. Energy Supply and Government Policy, edited by Robert J. Kalter and William A. Vogely, Cornell University Press, Ithaca, Chapter 10 by John F. O'Leary, 1975.

30. Energy Policy in Perspective, Today's Problems, Yesterday's Solutions, edited by Crawford D. Goodwin, 1981.

31. Nuclear Power, Man and the Environment, by R. J. Pentreath, Taylor & Frances Ltd., London, 1980.

32. Energy In Transition 1985 - 2010, Committee on Nuclear and Alternative Energy Systems, National Research Council, National Academy of Sciences, Washington, D. C. 1979, W. H. Freeman and Company, San Francisco.

33. American Energy Choices Before the Year 2000, edited by Elihu Bergman, Hans A. Bethe, Robert E. Marshak, Lexington Books, D. C. Health and Company, Lexington, Massachusetts, Chapter 12, by Aubrey Wagner, 1978.

34. Power Plant Siting, by John V. Winter and David A. Conner, Van Nostrand Reinhold Company, New York, 1978.

35. "Energy Assesment Emphasizing Nuclear Usage", by Robert E. Erb, Jr., October 17, 1980.

36. "What, if anything, Should be Done for Our Energy Needs", by Robert E. Erb, Jr. 1974.

37. INFO News Release, Atomic Industrial Forum, Inc., Washington, D. C., March, 1983. "France Continues to Dominate Foreign Nuclear Electricity Growth"

38. Emergency Response Capabilities (ERC) NUTAC Guidlines, Nuclear Regulatory Commission, NUTAC, 1983.

39. Fact Sheet, "Nuclear Economics: Critical Questions", Reddy Communications, Inc., Greenwich, Connecticut, April, 1982.

40. Nuclear Power, by R.W.Deutsch, General Physics Corp., Columbia, MD, 1979

41. "We Get More Radiation In Our Living Rooms Than From Nuclear Power Plants", America's Electric Energy Companies, Pelham Manor, New York, 1979.

42. 1982 Budget Revision, Virginia Electric and Power Company, Richmond, Virginia, 1982.

43. "Electricity: A Key to Productivity", by Fermont Felix, Gibbs & Hill, Inc., McGraw Hill, Inc., Electrical World, September 1, 1978.

44. "The Promise and Peril of Nuclear Energy", by Kenneth F. Weaver, National Geographics, April, 1979.

45. Two Energy Futures: A National Choice for the 80's, American Petroleum Institute, August, 1980.

46. Nuclear Power Growth 1974 - 2000, United States Atomic Energy Commission, Office of Planning and Analysis, U. S. Government Printing Office, February, 1974.

47. Energy Facts II, by Mike McCormack, Subcommittee on Energy Research, Development and Demonstration, Committee on Science and Technology, U. S. Government Printing Office, Washington, D. C., August 1975.

48. The Energy Fact Book, by John D. Dingell, Subcommittee on Energy and Power, Committee on Interstate and Foreign Commerce, U. S. Printing Office, Washington, D. C., November 1980.

49. Electricity - Today's Technologies, Tomorrow's Alternatives, Electric Power Research Institute, Palo Alto, California, 1981.

50. Monthly Energy Review, Energy Information Administration, U.S. Department of Energy, U. S. Government Printing Office, Washington, D. C., May 1982.

51. Commercial Nuclear Power Plants, Edition No. 14, NUS Corporation, Rockville, Maryland, January 1982.

52. "Commercial Nuclear Power Stations in the United States - Operable, Under Construction or Ordered - August 1, 198 ", Nuclear News, LaGrange Park, Illinois.

53. "Commercial Nuclear Power Stations Around the World - Operable, Under Construction, or Ordered - September 198 ", Nuclear News, LaGrange Park, Illinois.

54. Nuclear Power and the Environment - Questions and Answers, American Nuclear Society, Hinsdale, Illinois, 1976.

55. Systems Summary of a Westinghouse Pressurized Water Reactor Nuclear Power Plant, by George Masche, Westinghouse, Pennsylvania, 1973.

56. The American Heritage Dictionary of the English Language, editor William Morris, Houghton Mifflin Company, Boston, Massachusetts, 1982.

57. "ANS Executive Conference on Government or Self-Regulation of Nuclear Power Plants", by Victor Stello, Jr., Deputy Executive Director for Regional Operations and Generic Requirements, NRC, October 18, 1982.

58. "Work is Halted on A-Plant", by Terry Kinney, Associated Press Writer, Moscow, Ohio, 1983.

59. "Oil Price Decline: Effect on Vepco - Fact Sheet 1981 Through 1983", by S. R. Holt, Virginia Electric and Power Company, Richmond, Virginia, March 23, 1983.

60. "Nuclear Power Plant Safety", by Nunzio J. Palladino, Chairman U.S. Nuclear Regulatory Commission before the Town Hall of California, Los Angeles, California, November 16, 1982.

61. "The National Struggle for Energy Sufficiency", by John W. Landis, Stone & Webster Engineering Company at Joint Meeting of Engineering Societies, Allentown, Pennsylvania, February 22, 1980.

62. Nuclear Energy Technology, Theory and Practice of Commercial Nuclear Power, by Ronald Allen Knief, Hemisphere Publishing Corp., McGraw-Hill, New York, N.Y., 1981.

63. "Indian Point is a Bargain by Some Measures and a Bust By Others", by Matthew L. Wald, The New York Times, June 5, 1983.

64. "Scientific Panel's Study Backs Proposals For Tough U.S. Action To Fight Acid Rain", by Andy Pasztor, The Wall Street Journal, June 6, 1983.

65. "Easing Utility 'Rate Shock'", by Matthew L. Wald, The New York Times, June 7, 1983.

66. "High Court Eases Nuclear Licensing", The New York Times, June 7, 1983.

Summary of Experiences for Robert E. Erb, Jr.

Presently responsible for almost $50 million worth of capital improvements in an operating nuclear power plant. Evaluate and initiate proposed projects, develop the capital budget, appropriate funds, direct project engineers, and track and control *scopes*, *schedules*, and *costs* of over 90 intermediate projects each year. Responsibilities include an important segment of the engineering, procurement, and construction of a large multi billion dollar utility with extensive and diversified engineering requirements. Recommend facilities, personnel and funds required to carry out programs which are directly related toward the fulfillment of overall corporate objectives. Contribute inventions, new designs, and techniques which are regarded as advances in the field and promoting the level of the state of the arts. Negotiate critical and controversial issues and policies with officers of other organizations.

Responsible for the direction of contractors, project managers, project engineers, dicipline engineers (including mechanical, structural, civil, electrical, nuclear, engineering mechanics, chemical, thermodynamic, production, facilities, cost, planning, scheduling, process, manufacturing, architectural, quality assurance, materials, instrumentation, industrial, start-up, and others), budget analysts, marketing analysts, accountants, attorneys, programmers, systems analysts, personnel specialists, ad agencies, salesmen, estimators, and other specialists as required.

Familiar with the interpretations of many codes and laws. Initiated actions to amend the Energy Reorganization Act of 1974 to require the Nuclear Regulatory Commission to expedite licensing requirements and is supporting the Nuclear Site and Licensing Act which will amend the Atomic Energy Act of 1954. Developed procedures to satisfy 10CFR50.21, I.E. Bulletins, OSHA, Regulatory Guides, NUREG's, ANSI, ASME, and others. Experienced using standards and codes effectively and affiliated with many of the organizations which develop them including ISA, ASME, ASQC, MMS, ANS, MCEA, CES, ASCET, ICET, AIIE, SME, and many others.

Experienced in using computers to improve productivity and efficiency for tasks required. Developed parameters, and input for desirable output. Some of the software used include FORTRAN IV, TSO/SPF, SAS, STRUDL-II, SAP-IV, STARDYNE, ANSYS, TRIFLEX, ADLPIPE, P-STRESS, ELCEN-2, NUPIPE, EXPIPE, SUPERPIPE, PILUG, PITRUST, BEARST, MIDS, EASYTRIEVE, SCHEDULE, JOBS, CPTS, and many other data management programs.

Experience includes almost 20 years of engineering, construction, and management at eight nuclear sites, sixteen chemical, manufacturing, fabricating, commercial, and industrial facilities, and many international architectural/engineering offices. Academic experiences equate to eight years of undergraduate and graduate study at over a dozen colleges and universities (over 80 academic classes) plus over 30 technical and managerial seminars. Sufficient experience and training necessary to get most any job done.

STATEMENT

OF THE

AMERICAN IRON AND STEEL INSTITUTE

The American Iron and Steel Institute (AISI) is pleased to submit the following statement regarding S. 893 and S. 894. These proposals would alter the Nuclear Regulatory Commission (NRC) licensing process in several principal areas:

> Backfitting. The DOE proposal (S. 893) would require substantial enhancement of the public health and safety before imposing a new requirement (backfitting) on licensees. The NRC (S. 893) proposal would simply direct the Commission to adopt backfitting procedures.
>
> Combined Licenses. Both the NRC and DOE bills would permit the issuance of combined construction permit and operating licenses. While both proposals would eliminate the present mandatory hearing prior to construction (a petition to intervene would still require a hearing), the NRC bill would provide opportunity for hearing prior to operation on issues that were not and could not have been considered at an earlier stage.
>
> Standardized Designs. Both proposals would establish procedures for approval of standardized designs for production and utilization facilities.

Both the NRC and DOE recognize the need for licensing reform. The bills now under consideration -- S. 893 and S. 894 -- demonstrate this recognition. It is AISI's hope that these efforts will lead to the passage of legislation which will bring greater stability to the licensing process and thereby sustain and enhance public health and safety. All electricity ratepayers have a stake in seeking a nuclear regulatory process (1) that is predictable, timely, and efficient; (2) that does not unjustly burden the electricity ratepayer, large and small alike, by extending construction schedules and costs; and (3) that does not discourage investment by utilities in nuclear power.

There is a need for nuclear licensing reform because the present licensing process is not working properly. There are 83 plants now operating, and 62 others that are under construction or planned. With a more predictable licensing process in place, decisions on the role of nuclear power in the future for the United States can be decided rationally in the competitive market, by the utilities and the American public.

Moreover, reforming the process now should result in focusing Commission knowledge and industry expertise on areas of inquiry and review which might further enhance the safety of nuclear power facilities and away from less important but consumptive searches for an error free legal record, often by those whose objective is not the quest for sound technical decisions, but rather to block nuclear development.

Accordingly, AISI believes that the long-term energy interests of the United States are clearly served by action such as improved nuclear licensing procedures that do not distort or prejudice the economies of a nuclear option.

AISI is the principal trade association for the steel industry. Its 62 domestic member companies account for approximately 88% of the raw steel production capability in the United States. These AISI member companies use, in the manufacture of steel, about three percent of all the energy consumed in the United States. During 1982 -- a devastating year for the steel industry of the United States -- AISI member companies and other steel producers purchased 34.1 billion kilowatt hours of electricity. During 1981 -- a more typical year -- steel producers purchased 49.0 billion kilowatt hours of electricity. Moreover, the increased use of electric furnace steelmaking has increased the industry's relative consumption of purchased electricity. AISI thus has a significant interest in promoting the development and adoption of coordinated, rational, and consistent Federal policies which will assume an adequate, reliable, and efficient electricity supply for all users at prices based upon the costs incurred in serving those customers.

Because electricity is the most expensive form of energy purchased by AISI members, and because steelmaking is increasingly energy intensive and electricity intensive, AISI believes that Congress should take advantage afforded by the lull in new orders to reexamine and update the nuclear licensing process to meet the current needs of all parties to the regulatory process.

Recommendations

While AISI is not qualified to make specific recommendations on the basis of its own experience with the nuclear regulatory process, it does endorse the reasons for nuclear licensing reform set forth by Secretary of Energy Donald P. Hodell and by NRC Chairman Nunzio J. Palladino, and on the basis of its review of the proposals and its broad experience in other regulatory forums wishes to emphasize the following.

- The NRC mission necessarily emphasizes public health and safety in the operation of nuclear plants. Ratepayers, however, are entitled to a process which provides regulatory scrutiny without unreasonably prolonged procedures which add unnecessary costs for all.
- The basic decision of a utility whether or not to use nuclear power in helping to meet the electricity needs of all customers at the lowest cost should be reviewed in an open fashion with a full and fair opportunity for participation by all affected parties. However, the focus should not be on the *process*, but rather on the *substance* of the issues.
- The public interest requires that the NRC groundrules be revised *so that* (1) basic decisions are made early, *before* major allocations of time, talent, and money are committed; (2) degrees of risk are compared to the price of protection in a reasonable way; and (3) the non-productive, repetitive examination of power plant proposals is avoided, or at least reduced to a cost-effective minimum consistent with safety oversight.

As noted at the outset, both S. 893 and S. 894 embrace several aspects of the licensing process. Based on a review of these bills and in light of the principles set forth previously, AISI supports legislative reform proposals in the following five areas of NRC licensing.

(1) Backfitting

Both bills reflect a consensus that backfitting is a regulatory reform which needs to be addressed. However, the NRC proposal would merely require the Commission to establish criteria and procedures for control of the application of new requirements to licensed facilities (S. 893, §203). The DOE bill also would require the NRC to adopt regulations for backfitting, but it sets forth the substantive treatment which the NRC would be required to utilize in any such regulations (S. 894, §101, adding a new

§29(a) to the Atomic Energy Act). Thus, the DOE bill provides NRC with direction and legislative guidance in the backfit area, which should result in a more efficient process for approving backfits, something that is lacking today.

AISI believes that a sound backfitting provision should contain four elements: (1) the standard to be applied in order to determine when a backfit will be required; (2) a comprehensive definition of backfitting; (3) the items to be analyzed in determining when the standard has been met; and (4) the procedure to be utilized in determining when the standard has been met. The DOE bill contains these elements, and would establish the standard for backfitting as one under which backfitting would require a clear demonstration by the NRC that the proposed backfit will substantially enhance public health and safety as a result of overall safety of facility operations, and that such improvement is cost-justified when considered over the remaining life of the facility.

(2) Continued Operating License

Presently, the construction permit and operating license are obtained at different stages. Both S. 893 and S. 894 would permit the issuance of combined construction permit and operating licenses, so as to assure a more integrated, complete, and systematic review by the NRC early in the process, greater predictability and certainty for public planners, and earlier and more meaningful participation by the public.

AISI believes that the time to decide whether a plant should be built, and the design and safety parameters which it must meet, is when the plant is involved in the early stages of the construction permit process. The approach to single-stage licensing taken in the DOE bill (see S. 894, §102, amending §185 of the AEA) seems to AISI to be sound. Under the DOE approach, after a facility has been constructed pursuant to a single construction and operating license (COL), the COL holder certifies the facility has been constructed in conformity with the COL, the Atomic Energy Act, and NRC regulations. The NRC staff then would prepare a report stating whether the certification is correct and whether operation should be allowed, prohibited, or limited. The NRC would take action, following such inspections and tests as it deems appropriate to verify that construction conforms to the COL and that all other pre-operational requirements have been met. It could limit or prohibit operation of the facility; otherwise, the licensee may commence operation after certain statutory time periods have expired. AISI supports this concept and approach, and believes that it is adequate for the NRC to provide reasonable assurance of the public health and safety. Additional points that AISI believes are relevant here include:

- To be "meaningful," public participation in the licensing process must come at an early stage, when the questions raised can have realistic input to the licensing process. Once a plant has been constructed, challenges rarely result in significant changes in design or operation, but often result in protracted delay which adds materially to the cost ultimately to be borne by ratepayers.
- The single-stage COL should establish what inspections, tests, and analyses must be performed to confirm that the plant as constructed conforms to the terms of the license, NRC regulations, etc. For each inspection, test, and analysis, specific acceptance criteria could be established which must be met in order to assure proper construction. These criteria would be considered during the combined COL hearing, and would be included within the license. Helping draft the criteria -- with public participation -- could be meaningful, so as to make sure that the benefits of advanced detailed design and safety improvements can be obtained where such improvements are not yet developed when the COL is issued.
- While only one hearing would be allowed prior to the granting of the COL, procedures would continue to be available for bringing to NRC's attention alleged violations of the license. The NRC procedure established in §2.206 of the Commission regulations (10 C.F.R. §2.206) seems to AISI to be both appropriate and adequate. To institute a proceeding, a person must file a request with the Director of Regulation. He makes the initial determination, subject to Commission review. Thus, the expert agency would decide, in each §2.206 proceeding, whether a hearing should be held on whether a plant complies with the combined COL or not.

(3) Hybrid Hearings

Both NRC and DOE agree that hybrid hearings, involving an informal public hearing followed by an opportunity for a formal evidentiary hearing, are desirable. However, the NRC bill would authorize, but not require, the Commission to conduct such hybrid hearings, while the DOE bill would mandate them (S. 894, §103, adding new §§189a(2),(3),(4) and (5) to the AEA). AISI supports the concept of hybrid hearings and favors the DOE approach.

The record is clear that at present nuclear licensing hearings lack a clear purpose and focus, generate unnecessary costs and delays in the licensing of facilities, and divert scarce technical resources of both the NRC and the industry from safety-related activities. The NRC has consistently conducted all licensing hearings with a trial-type format (as had the AEC before it); hence legislation specifically mandating the hybrid hearing process is required if that process is to be pursued with some reasonable assurance that its validity will be sustained in any judicial challenge.

Further, AISI endorses the central concept of the hybrid hearing process: that NRC provide adjudicatory-type procedures only where a party has raised a genuine and substantial dispute of fact, the resolution of which is likely to be essential to the licensing decision, and where the issue can be resolved with sufficient accuracy only through adjudicatory procedures.

(4) Early Site Approval

Both the NRC and DOE proposals contain provisions which would create statutory authority for issuance of early site approvals and would confirm and strengthen existing NRC practices of conducting an early site review at the request of the applicant utility. AISI supports the concept of early site approval, so that NRC would be able to approve sites for prospective nuclear plants in advance of a utility's decision to apply for a construction permit. This would allow for earlier and more effective public participation in the site selection process, before significant resources are expended, thereby sparing both ratepayers and utilities much unnecessary expense and costly planning uncertainties.

(5) Preapproval of Design

Both bills would authorize the NRC to approve standardized designs for entire plants or major subsystems, so that utilities would have the option of choosing a plant of preapproved design rather than a one-of-a-kind or customized design. The NRC would define the level of detail necessary to obtain such approval, and would monitor construction to be sure that the facility or subsystem meets the safety and other requirements of the design. Once approved, the standardized design would remain valid for 10 years, after which it would be eligible for renewal.

If this provision decreases the time and resources required for design, review, certification, and construction of plants to meet the NRC's safety criteria, it should lead ultimately to lower costs for ratepayers. In addition, standardized designs should provide additional safety benefits, including:

- allowing regulators to focus on fewer plant-specific problems;
- providing greater depth of experience in a smaller number of basic designs;
- providing a broader base of generic experience to the builders and operators of nuclear powerplants;
- fostering more effective maintenance and improved operation; and
- making it easier to improve the training of nuclear plant personnel, a very important priority in AISI's opinion.

Conclusion

Improving the nuclear regulatory process would greatly reduce the regulatory "penalty" that as a practical matter currently impacts the nuclear option, and would enable new nuclear plant decisions to be made on the basis of economic and safety considerations.

Once a more rational nuclear licensing process is in place, the true economics of nuclear energy will define its role in meeting the future electricity needs of the United States.

ELCON

STATEMENT OF THE
ELECTRICITY CONSUMERS RESOURCE COUNCIL
TO THE SUBCOMMITTEE ON NUCLEAR REGULATION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
REGARDING S. 893 AND S. 894

The Electricity Consumers Resource Council (ELCON) is pleased to submit the following statement regarding S. 893 and S. 894. These bills would modify existing Nuclear Regulatory Commission (NRC) licensing procedures.

ELCON is a group of 16 large industrial consumers of electricity with facilities in most of the 50 states.*/ ELCON advocates and promotes the development and adoption of coordinated, rational and consistent federal, state and local policies which will assure an adequate, reliable and efficient electricity supply for all users at prices based on the costs incurred in serving customers.

ELCON's members consume approximately 10 percent of all electricity sold to industrial customers and nearly 5 percent of all electricity sold in the U.S. Because of our members' use of electricity, ELCON has a significant, continuing interest in the electric utility industry and we appreciate the opportunity to comment on this legislation.

SUMMARY

ELCON believes that conventional electrical generating technologies and fuels must be relied upon to provide the major share of our electrical needs at least through the remainder of the 20th century. The quantity of additional electricity that can be supplied economically from alternative energy and technological sources (such as solar, wind, water, geothermal and cogeneration) is very limited over the next two decades. Although fossil fuels remain the key natural resource input for our electricity generating capacities, the long-term energy interests of our country are clearly served by actions, such as improved licensing procedures, that enhance the economics of a nuclear option.

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*/ ELCON members are: Air Products and Chemicals, Inc.; Airco, Inc.; Anheuser-Busch Companies, Inc.; Armco Inc.; Bethlehem Steel Corporation; Diamond Shamrock Corporation; E.I. du Pont de Nemours & Company; FMC Corporation; General Motors Corporation; Kaiser Aluminum & Chemical Corporation; LCP Chemicals & Plastics, Inc.; Olin Corporation; PPG Industries, Inc.; Stauffer Chemical Company; Union Carbide Corporation; and United States Steel Corporation.

It is beyond our expertise to propose specific remedies to problems presently encountered in the development of nuclear power. Rather, we offer conceptual suggestions that, if refined and implemented, we believe would help shorten the nuclear licensing and construction period and reduce costs, without compromising safety.

Our recommendations involve five aspects of the licensing process:

- BACKFITTING — All backfitting proposals should be scrutinized through a centralized process. The NRC should conduct a quantitative assessment of each proposal and find that the backfit would result in an improvement in the protection of the public health and safety and that the costs are justified.

- ONE-STEP LICENSING — Utilities should be allowed to apply for a combined construction permit and operating license (CP/OL). The granting of the CP/OL would require the utility to meet specified construction and operating standards. The NRC should be required to audit the entire construction process, be assured that the unit will be appropriate, and verify that necessary safety precautions have been implemented.

- HYBRID HEARING PROCESS — A process should be established that encourages resolution of issues in other than adjudicatory hearings. Written statements from all parties first should be presented to and evaluated by the NRC. Oral presentations should be allowed but not mandated. Adjudicatory hearings should be utilized only when it has been demonstrated that less formal proceedings cannot resolve substantial disagreements regarding basic public health and safety issues. Public hearings should not be held unless requested by either intervenors or the NRC. Issues once resolved should not be reheard unless substantial new material facts are introduced.

- EARLY SITE PERMIT — Utilities should be able to certify a site as suitable for a nuclear unit prior to expending significant resources in demonstrating the need for the plant and making a commitment to build.

- PRE-APPROVAL OF DESIGN — The NRC should be encouraged to pre-approve designs for major subsystems or entire units. Pre-approved designs could increase safety by providing a more detailed review of fewer variables and decrease costs by shortening the construction period.

DISCUSSION

ELCON represents industrial electricity consumers. Our members depend upon large quantities of reliable electric power. There are no practicable alternative energy sources for many electricity uses and electricity is the most expensive energy our members purchase.

ELCON believes that to be economically competitive, the U.S. must be assured of an adequate, reliable and efficient supply of electricity. Utilities must be able to build an appropriate mix of generating units to enable them to meet the electricity needs of all customers at least cost.[1]

In providing electricity at least cost, ELCON believes that utilities must be able to consider all options. For example, we believe that utilities should continue to explore the feasibility of utilizing solar, wind, water, geothermal and cogeneration facilities if economical. However, we believe that the amount of additional electricity that can be supplied from these alternatives is limited for some time to come. Present technology limits the commercial development of solar, wind and other natural resources to small power needs in selected applications; cogeneration is limited by thermal and other needs of industry; and most economically-viable hydro sites presently are developed.

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[1] Throughout this statement, we use the term "least cost" as recently defined by the Federal Energy Regulatory Commission (FERC) in a Notice of Proposed Rulemaking (at 48 Federal Register 21163, May 11, 1983):

> The term "least cost energy strategy" is often associated with what is known as the "soft path" to energy supply — small scale, decentralized electricity technologies and renewable fuel resources. Here the term is used in a literal sense — the supply of electricity to consumers in the short- and long-run at the lowest possible cost (in the economic sense) without any predetermination as to whether the energy is produced by "soft" technologies, "hard" technologies or some combination of the two. As a regulatory agency, we are concerned with removing any hindrances that might prevent utilities from moving along the path of providing their customers with a reliable supply of electricity at lowest possible cost.

Our views are consistent with many respected energy analysts. For example, Mr. John M. Marcum, Assistant Director for Energy, Office of Science and Technology Policy, Office of the Vice President of the United States, stated:

> "Even the most bullish prognostications for the 'soft' energy sources ... do not allow for more than a small fraction of the nation's [electrical] needs by the year 2000. This leaves oil, natural gas, coal and uranium to provide the major share of energy needs, just as they do today."2/

Although our country's fossil fuel resources presently are the foundation of our energy security, it is clearly in the country's interest to build upon this foundation through more efficient licensing procedures that improve the economics of the nuclear option.

While urging the reestablishment of the nuclear option, we emphasize that we are not nuclear zealots. Indeed, as a practical matter, our members do not have a preference as to the fuel source utilized by the utility to produce the electricity that they use to produce their products. Electricity produced by nuclear generating units work just as well as electricity produced by coal or other sources as our members produce steel, aluminum, automobiles or chemicals. We simply do not desire to see the nuclear option foreclosed for reasons over which we have control.

2/ Letter by John Marcum to the Washington Post, June 17, 1983, page A-16.

THE RISE AND FALL OF THE NUCLEAR OPTION

The first commercial order for a nuclear generating unit was placed in 1954.[3] As of May 1983, our nation had 83 licensed nuclear units in operation. Nuclear units generated 12.5 percent of our nation's electricity last year. The number of operating nuclear units is expected to grow to 130 within the next ten years. Nuclear power clearly has demonstrated that it has made an important contribution to our electric power system.

But the nuclear option is not viable today. New York State Electric and Gas canceled their 838 mw Bell Station unit in 1972 commencing a trend that continues to the present. By the end of 1982, utilities had canceled a total of 100 units representing 109,754 mw of capacities. No new orders of nuclear units have been made since 1978 and equipment manufacturers do not believe that utilities are seriously considering placing any new orders in the near term.

NUCLEAR LICENSING REFORM IS NEEDED

There are many reasons why utilities do not view nuclear as a viable option today. Electric load growth has fallen dramatically from levels experienced just a few decades ago causing utilities to reassess their need for any new capacity. The financial condition of utilities for several years deteriorated to such an extent that utilities found it difficult to finance any substantial construction program. And

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3/ Data regarding orders and cancellations are from Nuclear Plant Cancellations: Causes, Costs and Consequences, Energy Information Administration, U.S. Department of Energy, Washington, D.C., DOE/EIA-0392, April 1983, pages 4-5. Data regarding the current status of the nuclear industry and projections of future units are from testimony delivered by Energy Secretary Donald P. Hodel before the Subcommittee on Nuclear Regulation, Committee on Environment and Public Works, U.S. Senate, May 26, 1983, pages 2-3.

opposition by opponents of any nuclear power development received sustained media attention.

Additionally, problems with the present licensing process have severely inhibited the development of nuclear power.[4] Problems with the licensing process significantly increase the time required to construct a nuclear unit and, hence, its costs. We think that improvements in the efficiency of the licensing procedure can help revive the nuclear option without compromising safety. These thoughts are based on several studies such as those discussed briefly below.

The U.S. Energy Information Administration (EIA) recently released a report on causes, costs and consequences of nuclear plant cancellations.[5] In this report, the EIA states "...continuously changing regulations, licensing delays and uncertainty surrounding future standards for nuclear plants ... have substantially contributed to the cancellation of 38 units. While utilities acknowledge their responsibility for the safe utilization of nuclear power, they also feel that the regulatory environment is unnecessarily cumbersome."[6] Similarly, the Electric Power Research Institute (EPRI) reports that more than 20 percent of nuclear plant construction problems are due to "regulatory ratchet."[7] Since EPRI limited its analysis to the "construction" phase only (EPRI did not study the planning, licensing and startup phases in this report), the total regulatory problems certainly represent more than 20 percent of the total problems.

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[4] We recognize that some people believe that the nuclear licensing process is working just fine. By this, we mean that some people are unalterably opposed to the development of nuclear power and find the present regulatory process a very effective means to achieve their preconceived end.

[5] DOE/EIA, op. cit.

[6] Ibid., page 25.

[7] EPRI, op. cit, pages 2-13.

We don't think that it must take as long as it presently does to build a nuclear unit. For example:

- On average, it now takes more than twelve years to build a nuclear unit in the U.S.8/
- In 1965, it only took 6.3 years, on average, to build a nuclear unit in the U.S.9/
- Nuclear units of similar design and size are routinely built in five to six years in foreign countries:
  - The Electric Power Research Institute (EPRI) states that "In Japan, France and Sweden ... nuclear plants can be built in approximately 60 months."10/
  - France put eight 957 megawatt (mw) PWR units into commercial service in 1981 alone. Construction periods for these units ranged from 58 months to 78 months.11/
  - A 950 mw BWR unit was recently built for the Taiwan Power Company in 61-1/2 months.12/ This unit met all U.S. nuclear licensing requirements, and all design changes recommended by the equipment manufacturer were included.

8/ "Power Plant Scheduling, Construction, and Costs," Ramesh N. Budwani, Power Engineering, August 1982, page 38. Construction periods are defined as the time between the ordering of the nuclear steam supply system (NSSS) and fuel loading.

9/ "Power Plant Capital Costs Going Out of Sight," F.C. Olds, Power Engineering, August 1974, page 38.

10/ An Analysis of Power Plant Construction Lead Times, Volume I: Analysis and Results, Electric Power Research Institute, EPRI EA-2880, February 1983, pages 2-16.

11/ Nucleonics Week, November 12, 1981, page 5. NW reports construction times for the following Electricite de France units: Fessenheim-1, 78 months; Bugey-1, 77 months; Tricastin-3, 68 months; Tricastin-4, 66 months; and St. Laurent-des-Eaux-B1, 58 months. PWR stands for pressurized water reactor.

12/ Engineering News Record, May 26, 1983, page 27. ENR reports that Taiwan Power's Kuosheng-3 had fuel loaded 61-1/2 months after the first concrete was poured. BWR stands for boiling water reactor.

These data demonstrate that it takes approximately twice as long today to build a nuclear unit either as it took in 1965 in the U.S. or as it takes today in other countries. We believe that this difference is prima facie evidence that a significant problem exists.

Studies and data such as those discussed above lead us to conclude that licensing reform could significantly reduce the time required to build a nuclear unit. Reductions in construction periods could allow utilities to predict the need for the units with more accuracy and reduce substantially the required costs. It is practically impossible to accurately predict the need for new facilities twelve to fourteen years into the future. These needs are assessed much more accurately over shorter planning horizons. And while it is difficult to assess the cost impact of reduced construction periods, a major builder of nuclear units estimates that reducing the construction period from fourteen to nine years would save 35 percent of the costs.[13]

LICENSING REFORM IS TIMELY

The existing nuclear licensing process was established in 1954 by the Atomic Energy Act. The process has been modified slightly in the twenty-nine years following passage of the AEA, however its structure is still basically as it was nearly three decades ago.

At the time of passage of the AEA, there were very few nuclear units either planned or in operation. Nuclear technology was at an early stage of development. There were many first-time nuclear applicants, designers and contractors, and many

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13/ "Electricity and the Economy," Bechtel Power Corporation, San Francisco, California, February 1983.

novel design concepts. Accordingly, the licensing process was structured to allow licensing decisions to be made while design work was still in progress and to focus on case-specific reviews of individual plant-site considerations.

Since 1954, more than 80 nuclear units have been built and another 50 are under construction. The experiences learned as these units were built have convinced a broad spectrum of individuals, groups and organizations that the licensing process should be revised. For example, two major governmental reports commissioned to study the Three Mile Island accident emphasized the importance of changing the licensing process to focus on issues of public health and safety and of making public participation more meaningful.[14/] The Nuclear Regulatory Commission has conducted an internal examination and concluded that "...its present licensing procedures are not the most effective or efficient means of licensing nuclear plants and that the licensing process must be reformed."[15/] As a result, the NRC has proposed both administrative and legislative modifications to the licensing procedures. Additionally, after a detailed review of existing procedures, the U.S. Department of Energy concluded that "The current regulatory process does not appear to fulfill the needs of the participants — that is, the public, the regulators, the consumers, and the industry ... it is time for the licensing process to be reexamined from the point of view of twenty-five years of experience, and to be upgraded to meet the current needs of all parties to the regulatory process."[16/]

14/ "Kemeny Report" by the Presidential Commission that reviewed the Three Mile Island accident and the "Rogovin Report" by the NRC Special Inquiry Group on Three Mile Island.

15/ Testimony of Nunzio J. Palladino, Chairman, NRC, before the Subcommittee on Nuclear Regulation, Committee on Environment and Public Works, U.S. Senate, May 25, 1983, pages 2-3.

16/ Testimony of Donald P. Hodel, Secretary, U.S. Department of Energy, before the Subcommittee on Nuclear Regulation, Committee on Environment and Public Works, U.S. Senate, May 26, 1983, pages 1-3.

RECOMMENDATIONS

ELCON believes that efforts should be made to reestablish the nuclear option without sacrificing safety. Modifications to the existing licensing process would not solve all the problems associated with nuclear power, but would help remove U.S. imposed artificial barriers to a valuable domestic energy source.

It is beyond our expertise to propose specific remedies. Rather, we offer the following conceptual suggestions that we believe would assist in reestablishing nuclear power as an option to be considered by utilities in their long-term plans. Our suggestions are based on the belief that making the licensing process more predictable will enhance the ability to assess the need for nuclear facilities and, simultaneously, reduce both the construction period and the unit's costs — without compromising safety.

Our recommendations involve five aspects of the licensing process:

- BACKFITTING — The current licensing process does not contain a systematic and ordered process for evaluating the need for design modifications — or backfits — of nuclear units. The NRC has identified 87 different procedures by which modifications can be ordered before, during and after a unit is built. Technical problems associated with one particular unit may result in recommendations for changes in many unaffected units, often without adequate consideration of the impact of the change on either safety or performance.

  ELCON recommends that all backfitting proposals should be scrutinized through a centralized process within the NRC. The NRC should conduct a quantitative assessment of the seriousness of the problem, the possibility of the problem occurring in other units, the expected safety improvements associated with the recommended solution (both on the unit directly affected as well as on units potentially affected), and the expected costs over the remaining life of all affected units. The NRC should be required to find that the backfit would result in an improvement in the protection of public health and safety and that the costs are justified prior to ordering the backfit.

  ELCON recognizes that the NRC presently is evaluating its backfitting procedures and is implementing some changes. However, we believe that long-term predictability and stability of the licensing process can be increased with legislated guidelines.

- ONE-STEP LICENSING — Present licensing procedures require the issuance of both a construction permit (CP) and an operating license (OL). The CP is granted when design work is in the early stages — often when only 20-25 percent complete. The OL is granted after the plant is built — many years later. Public hearings are required for both the CP and the OL. Issues identical to those debated during the CP hearing often are raised a second time at the OL hearing, causing a time-consuming and inefficient reconsideration of a concern that was resolved earlier.

  Reconsideration of the same issues should be avoided. If separate CP and OL licenses are to be issued, the issues included in the hearings for each should be strictly limited to the topics appropriate to each license. Issues debated and resolved at the CP hearing should not be reheard at the OL hearing.

  ELCON believes that improvements in the licensing process could be realized by allowing utilities to apply to the NRC for a combined CP/OL in one proceeding. The granting of the combined CP/OL would require the utility to meet specified construction and operating standards and the NRC to audit the entire construction process. Before the unit is placed in operation, the NRC must be assured that the operators are properly trained, appropriate evacuation plans have been implemented, etc. A combined CP/OL procedure would: allow a more efficient and systematic review by the NRC at an early stage in the process; encourage utilities to submit applications with more design work completed; increase the predictability and certainty of the overall process; and provide an earlier and more meaningful hearing procedure.

- HYBRID HEARING PROCESS — The present hearing process requires extremely time-consuming and complex adjudicatory hearings to resolve all issues — even issues that have been resolved at earlier stages in the process.

  ELCON believes that adjudicatory hearings are necessary to resolve key issues that involve factual disputes. However, we believe that opponents to nuclear power often are able to utilize the hearing process as a means to achieve their preconceived goals at the expense of consumers of electricity.

  We recommend the establishment of a process that encourages resolution of issues in other than an adjudicatory hearing. Written statements from all parties first should be presented to and evaluated by NRC. Oral presentations should be allowed but not mandated. Adjudicatory hearings should be utilized only when it has been demonstrated that less formal proceedings cannot resolve substantial disagreements regarding basic public health and safety issues. Under no circumstances should formal hearings be held unless requested by either outside intervenors or the NRC. Issues once resolved should not be reheard unless substantial new material facts are introduced. Such a procedure would be in compliance with the Administrative Procedures Act and would not conflict with the requirements of the National Environmental Policy Act.

- EARLY SITE PERMIT — Present procedures require a utility to demonstrate the need for a plant and make a commitment to build a facility before engaging in a site review. The NRC has promulgated regulations providing an opportunity for site review issues and the issuance of a Staff Site Report prior to a utility's decision to apply for a CP. However, the Staff Site Report would not be binding on the NRC under the regulations.

  We believe that utilities should be able to certify a site as suitable for a nuclear unit prior to demonstrating a need for a unit. This certification should be binding on the NRC unless material facts are introduced demonstrating physical changes have occurred that make the site now unsuitable for a nuclear unit. Such a procedure would add predictability and encourage more effective public participation in the site selection process before significant resources are expended.

- PRE-APPROVAL OF DESIGN — When applying for a CP, utilities typically submit design information covering only about 20-25 percent of the completed unit. Design work then continues during the construction period. Current NRC regulations allow a vendor to seek staff approval of a preliminary or final design separate from a CP application. However, this staff approval is not binding on the NRC.

  ELCON believes that at the request of a manufacturer or vendor, the NRC should be encouraged to pre-approve designs for major subsystems or entire units. This would allow a utility to select a pre-approved design rather than be required to comply with a design approval process for each unit built. The NRC should specify the data required for pre-approval and would monitor the construction to be certain that the final unit meets the safety and other requirements of the design.

  Pre-approved designs could decrease substantially the time and resources required for the design, review, certification and construction of units since units could be standardized rather than each being a customized design. Pre-approved designs could help build in safety by providing more detailed review of fewer designs, focusing attention on fewer plant-specific problems and providing a broader base of experience on general problems.

ESTABLISHED BY THE
TREATY OF JUNE 9, 1855
CENTENNIAL JUNE 9, 1955

CONFEDERATED TRIBES AND BANDS
Yakima Indian Nation

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GENERAL COUNCIL
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TESTIMONY OF
THE YAKIMA INDIAN NATION
before the
SUBCOMMITTEE ON NUCLEAR REGULATION
of the
UNITED STATES SENATE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
July 12, 1983
ON
PROPOSED NUCLEAR LICENSING "REFORMS"

Mr. Chairman, members of the Subcommittee:

My name is Melvin Sampson; I am chairman of the Legislative Committee of the Tribal Council of the Confederated Tribes and Bands of the Yakima Indian Nation. I appreciate the opportunity to provide the Committee with the views of the Yakima Indian Nation concerning S.894 and S.893, sponsored on behalf of the Department of Energy ("DOE") and the Nuclear Regulatory Commission ("NRC") respectively, which would alter the existing scheme for the licensing of nuclear power plants. At the outset, I emphasize that we are very concerned that these so-called "reforms" will, in fact, effectively gut a licensing system that--while it has some problems--has served reasonably well to date, and that, with a few minor changes, would assure truly effective public participation in government decisions regarding nuclear power. We oppose this legislation.

The Yakima Indian Nation can speak with a fresh perspective on this issue because we have only recently become involved in nuclear reactor licensing. At the same time, our views are solidly grounded in a knowledge of the licensing system. Last year, the Yakima Indian Nation intervened in the construction permit hearing for the proposed Skagit/Hanford reactor. We did not make that decision lightly. To the contrary, we carefully studied our options and discussed nuclear power in general and the licensing process in particular with many knowledgable people. Only after extensive study and discussion of virtually all aspects of nuclear reactor licensing did we decide to intervene to protect our interests. We speak here on the basis of this knowledge.

1. There is no need for this legislation.

These bills are being proposed, in the words of Energy Secretary Hodel, to create

> a nuclear regulatory process that will sustain and enhance public health and safety; that is predictable, timely, and efficient; that does not discourage investment by utilities in nuclear power by being open-ended; and that does not unjustly burden the electricity consumer by extending construction schedules and costs.

Testimony of Secretary Hodel to the Subcommittee on Energy and the Environment of the House Committee on Interior and Insular Affairs, June 9, 1983. None of those goals support the proposals under consideration here.

First, it is not true that the existing licensing system, providing for public participation in adjudicatory hearings well-designed to resolve factual disputes, in any way extends construction schedules and costs. Although we know this is a persistent claim of the nuclear industry, it is false. We understand that every study ever done on the subject has concluded that the purported delays in licensing nuclear reactors are not caused to any significant degree by the licensing hearing process.

Second, the facts do not support the claim that the nuclear licensing and regulatory process discourages investment. According to former Deputy Secretary of Energy W. Kenneth Davis, as reported in Nucleonics Week, reduced demand and economic developments caused the recent cancellations of planned nuclear plants, and those factors, rather than any alleged overregulation, will control the health of the nuclear industry in the future. And according to Energy Daily, a vice-president of Arizona Public Service Company views the industry's complaints about NRC regulation as a "lame excuse" for the industry's own failures.

Third, the process proposed by Secretary Hodel and the NRC will not "enhance public health and safety." To the contrary, it will effectively eliminate an important forum in which intervenors have often raised very serious safety issues that had previously been ignored by the utility and the NRC Staff. Perhaps the best example of this is the widely publicized situation at the Zimmer reactor in Ohio, where only persistent intervenor pressure, using all of the procedural tools at their disposal, brought to light massive quality assurance violations. Far from improving the protection of public health and safety, the DOE and NRC efforts to restrict public participation would increase the likelihood of approval of seriously deficient reactors.

2. This legislation would do serious harm.

a. The Hearing Proposal

These proposals would amend section 189 of the Atomic Energy Act to eliminate completely the right to adjudicatory hearings and cross-examination at any stage of NRC licensing. This is the so-called "hybrid" hearing. Members of the public would only be allowed to make written and oral presentations, although it does not appear that these presentations will constitute evidence, or that they will be allowed to present expert witnesses. In addition, members of the public would virtually have to prove their claims in order even to have the right to cross-examine Staff or utility witnesses. But, of course, this is impossible since one often needs to cross-examine witnesses to prove one's point. These provisions would eliminate effective public participation.

This restriction is directly contrary to the advice of the Kemeny Commission following the accident at Three Mile Island, and it contradicts often-expressed NRC views that cross-examination is a fundamental right of intervenors in NRC licensing hearings. This proposal turns all concepts of fairness on their head. It would force the public to bear an impossible burden of proof simply to be able to participate in the hearing. It is contrary to the most fundamental notions of due process and fair play.

2. Backfitting.

The DOE bill would make it nearly impossible for the NRC to require existing plants to upgrade their equipment. Section 29a would create a presumption against modifying current plants to incorporate new understanding of safety issues, and the provision for design pre-approval would render approval of a design "conclusive" for 10 years, regardless of what is learned in the interim.

Since we live near the Hanford site of two plants under construction (WPPSS) and a proposed new plant (Skagit/Hanford), we are very concerned about these provisions. They would virtually set in stone designs that could well be found in the future to be unsafe. In fact, since nuclear reactor technology remains very much in the developmental stages, we would *expect* a need for improvements in the future. We reject any proposal that would effectively require us to live with reactors that are not as safe as current information indicates they should be.

We note, in this regard, that this proposal is precisely the opposite of what the Kemeny Commission recommended. Absent compelling reasons to the contrary, important safety improvements should always be reflected in existing reactors. We cannot understand why the industry and the NRC consistently reject such reasonable advice from the Kemeny Commission, a body that was basically supportive of nuclear power and provided important advice that, if it were not consistently ignored, would considerably improve the condition of nuclear power in this country.

3. Licensing reactors without design reviews.

One of the most disturbing proposals in these bills is embodied in section 185 of the DOE bill. This would establish a one-step licensing process.

We are not in principle opposed to one-step licensing. It would probably be more efficient than the current system. More important, it would, if properly implemented, assure that the licensing hearing process did not begin until the reactor design was completed, which is not the case today.

The DOE proposal is an abomination. It would allow the issuance of a combined construction permit and operating license even though the final design for the reactor had not yet been completed. And then the utility would be able to begin operating the plant simply by "certifying" that the facility was properly constructed. The public is given only a minimal opportunity for written comment.

The effect of this provision would be devastating. The quality assurance failures at Zimmer would never have been revealed. The incredible reversal of the seismic features at Diablo Canyon would probably still be in place. People in Ohio and California would be living on borrowed time, not because nuclear power is necessarily unsafe, but because the public and even the NRC were prohibited from effective regulation of an industry that has demonstrated that it has considerable difficulty designing and constructing safe facilities without the closest scrutiny.

For similar reasons, we oppose section 185e of the DOE bill because it would allow even safety-related construction to begin before a construction permit has been issued and before hearings have even been held. It would create an utterly meaningless standard for allowing such construction activities to go ahead.

CONCLUSION

We have addressed only a few of the specific points of these bills. We could go on in the same vein on virtually every provision they contain. Perhaps above all, we are astonished by the short-sightedness of these proposals. Even the present licensing procedure is unduly restrictive with respect to intervenors. The NRC-imposed restrictions on the admissibility of intervenors' contentions are almost a denial of due process. It is contrary to other of Congress' determinations concerning public participation and the rules of pleadings in federal courts. These other, generally accepted procedures provide for hearing on a mere notice basis, without the standard of virtual proof the NRC requires for admission of contentions.

To exclude the public from effective participation is to increase public resistance to particular nuclear plants and to nuclear power in general. That is certainly true with respect to the Yakima Indian Nation. Because the Yakima Reservation is our perpetual homeland, the option of evacuation is not available to us if these proposals to deregulate the nuclear industry result in a severe accident at a Hanford facility. We do not now oppose the concept of nuclear power as such, but we insist on the right to be heard at every important step in the process. From our point of view, and undoubtedly from the point of view of most members of the public, if these rights are denied, we will be forced into a position of outright opposition to nuclear power that we might otherwise not have to take.

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